SYLLABUS

OF

THE COURSE OF LECTURES

ON

MATERIA MEDICA AND PHARMACY,

DELIVERED IN

THE UNIVERSITY OF PENNSYLVANIA.

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PREFACE.

The following Syllabus was prepared with the exclusive view of facilitating the studies of those who attend the Lectures on Materia Medica and Pharmacy, delivered in the University of Pennsylvania. It can be understood and appreciated only in connexion with these lectures; and the author, therefore, deprecates any judgment upon its merits as an independent essay. One of his objects in publishing it is to supply the deficiencies of the work which he has adopted as the Text Book of his lectures. In the Dispensatory of the United States, many points are omitted which are deemed essential in a course of instruction upon Materia Medica, and the arrangement of its parts is not such as is best adapted for the convenient study of the science. But by taking the Syllabus as a guide, following the course which it indicates, committing to memory the facts which it presents, and, on the points which are merely hinted at, referring for information to the Dispensatory, in the order pointed out in the pamphlet, the student will be enabled, in connexion with the lectures, to obtain all the elementary knowledge on Materia Medica and Pharmacy which can be deemed essential. The author, however, does not wish to be understood as recommending his pupils to confine their reading within these narrow limits. On the contrary, he strongly urges on them the propriety, after having prosecuted the course of elementary study above referred to, of perusing all the respectable treatises on these branches of medical science which may be within their reach, not neglecting those of the French and German writers. They will thus be enabled to form a more enlightened judgment in relation to the accuracy of the facts and the correctness of the opinions which they may have been taught, and will at the same time acquire a stock of additional knowledge, which cannot fail to prove useful in the practical pursuit of their profession.

Notes from Dr. Wood's Lectures.

1. Remedy is a generic term including all agents, material or immaterial physical or mental, which are capable of curing or palliating diseases. Medicines are but one species of remedy; thus exercise, rest, climate, diet, blood-letting, the Surgeon's knife, &c are remedies but not medicines.

2. Pharmacopoeias establish uniformity in nomenclature & contain formulæ for the preparations of medicines which in Europe, apothecaries are compelled by law to adopt. Dispensatories are founded on the basis of pharmacopoeia. They contain enlarged descriptions of the source & properties of medicines; their therapeutical value & the effects and uses of their combinations.

3. The system of weights used in medicine as recognized by the London, Edin., Dub., & U.S. Pharmacopoeias is,

Apothecaries' Weight.

Pound.	Ounces.	Drachms.	Scruples.	Grains.
℔ 1 =	12 =	96 =	288 =	5760
℥ 1 =	8 =	24 =	480	
℥ 1 =	3 =	60		
℈ 1 =	20			
gr. 1				

The pound & ounce are the same as the pound & ounce Troy, but the ounce is differently subdivided; yet the Apothecaries' grain is equal to the grain Troy.
The French gramme is equal to 15.4063 grains Troy.
The liquid measure of the Dublin, & U. S. P. is called.

Apothecaries' Measure.

Gallon.	Pint.	Fluid-℥.	Fluid'ms.	Minims.
C. 1 =	8 =	128	1024 =	61440
O 1 =	16	128 =	7680	
f.℥ 1		8 =	480	
f.℥ 1 =				7760

Tho. Talbird.

SYLLABUS OF LECTURES.

PRELIMINARY OBSERVATIONS.

Materia Medica is the science which treats of medicines; Pharmacy, the art of preparing them for use. Both are subjects of the present course of lectures; but the latter, belonging properly to a distinct profession, is considered of secondary importance, and treated of incidentally, and as subsidiary to the former.

1. Medicines are substances capable of producing, as an ordinary result, and by their own inherent power, certain modifications of the vital functions, which render them applicable to the cure of disease.

The proper mode of studying medicines considered. The objects of attention in relation to them are their origin; their modes of collection and preparation for market; their commercial history; their sensible properties, and chemical composition and relations; their physiological action or influence upon the bodily functions in a state of health, and, in connexion with this, their toxicological history; their effects in morbid states of the system, and the general indications they are calculated to answer in the treatment of disease; their particular applications in cases which do not fall within any general rule; and finally, their dose, mode of administration, and the extemporaneous or officinal preparation to which they may be subjected.

2. Observations in relation to Pharmacopœias, or codes published by authoritative bodies for the recognition of standard remedies, and the regulation of the modes of preparing them for use.

The study of Botany recommended as preliminary to that of Materia Medica; and some acquaintance with Chemistry, Anatomy, and Physiology considered essential to a thorough understanding of the subject in all its relations.

An accurate knowledge of the standard weights and measures employed in the purchase and sale, as well as in the preparation and prescription of medicines, insisted on as a necessary accomplishment of the student of Materia Medica.

3. These weights and measures explained. (See U. S. Dispensatory.)

Modus operandi of medicines. The operation of medicines considered as *primary* or *secondary*, the former being their immediate action upon the system, the latter that which follows their original and characteristic impression, in consequence of certain physiological laws.

Primary operation of Medicines.

In the *primary operation* of medicines, they may, *first*, extend their influence over the system or to distant parts by means of nervous communication, or, *secondly*, they may enter the blood-vessels and act through the medium of the circulation, or, *thirdly*, they may act exclusively in the neighbourhood of their application.

1. The mode of operation by means of nervous communication explained and illustrated. This communication effected either by the propagation of the original impression to the brain, and its transmission thence to the part or parts operated upon, or directly through the medium of nerves connecting the part receiving the impression of the medicine with the seat of its characteristic action.

2. The operation of medicines through the route of the circulation proved by their existence in the secretions, and still more satisfactorily by their detection in the blood vessels, after having been taken into the stomach or applied to various other parts of the body. The idea advanced that some medicines probably act in both ways, viz. by nervous communication or sympathy, and by absorption into the blood-vessels and circulation with the blood. Facts stated to show that medicines may be absorbed not from the alimentary canal only, but also from the bronchial mucous membrane, the serous surfaces, the cellular tissue, and from the skin especially when deprived of its cuticle. The rapidity of the absorption is often very great, but various according to the part to which the medicine is applied, the state of the system at the time, and the nature of the medicine itself. Said to be greatest from the air cells of the lungs, to be inversely proportionate to the quantity of cir-

culating fluid, and to be favoured by the solubility, miscibility with the blood, and freedom from corrosive properties of the substance absorbed. Some observations in relation to the mode in which absorption is effected.

3. The exclusively local action of certain medicines, or of substances applied in a certain manner, alluded to, and illustrated.

In their primary action, medicines stated to differ greatly as to the parts which they affect; each particular medicine or class of medicines having a tendency to act on some one portion of the system, some one organ or set of organs, more than upon others. This tendency often independent of the part of the body to which the medicine is applied. Explained by the possession of different susceptibilities by different components of the frame, in consequence of which one portion receives impressions from the contact of a medicine, while another is wholly impassive to its action. In this tendency to particular parts, a ground of distinction between medicines pointed out. Certain substances act especially on some one of the minor systems of the body, as the circulatory, nervous, or absorbent; and as these pervade the whole frame, and are so interwoven in their sympathies as well as position, that one cannot be deeply affected without some participation of the others, such substances may be considered as general in their action. Others have an especial affinity for some one of the organs, as the stomach, bowels, skin, kidneys, or lungs; and as these organs are distinct in situation, the medicines affecting them may be said to be local in their primary action. Both the general and local remedies may be subdivided, according as they operate on some one of the systems or organs in preference to the others.

The opinion maintained that medicines differ not only as to the part which they are disposed to affect, but also in the nature of their primary action upon the same part. Another ground of classification thus afforded. But notwithstanding this difference in the essential nature of their action, medicines almost universally, in their primary operation, either produce an excitement of the system, or some portion of it, above the healthy standard, or occasion a depression of action below that standard; in other words, are *stimulant* or *sedative*. The great majority of them are stimulant, and perhaps all may be so applied as to produce a direct excitement of some part or organ of the body. But it is not deducible from this fact that there are no direct sedatives. It is a mistake to consider medicines essentially stimulant or essentially sedative under all circumstances. Medicines produce peculiar effects not only from their own peculiar nature, but in consequence also of the peculiar susceptibilities of the body or its organs. Now these susceptibilities are not the same in different parts of the frame in health, nor even in the same part in different states of health, or under different circumstances of situation. A necessary inference is, that the same medicine must operate differently in different parts of the body having these different susceptibilities, and even that its operation upon the same part may vary with the susceptibility of the part. There can be no difficulty, therefore, in understanding that a medicine may be either stimulant or sedative, according to the part on which it acts, or to the condition of the system or some one of its organs at the time of its action. Instances illustrative of these statements adduced.

It is important to be acquainted with the various influences, which, by affecting the system, may modify the action of medicines. These influences treated of under the heads of 1. disease, 2. climate, 3. modes of living, 4. habit, 5. age, 6. sex, 7. temperament, 8. idiosyncrasies, and 9. mental operations. (See U. S. Dispensatory—Appendix.)

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Secondary Effects of Medicines.

By this term are meant the changes which take place in any portion of the body, not produced by the immediate operation of the medicine, but dependent upon certain laws of the system, which determine peculiar actions or conditions as the consequence of antecedent actions or conditions. Arranged under the following heads:—

1. A state of depression following excitement;
2. Sympathetic excitement arising from local inflammation;
3. Removal of local irritations or inflammations on the principle of revulsion;
4. Cessation of diseased action in consequence of the removal of the cause;
5. Efforts made by nature to repair the damage received in consequence of the application of medicines to the body.

These effects highly important in the treatment of disease. Explained and illustrated.

Administration of medicines next considered, including, *first*, the forms in which they are used, and *secondly*, the parts with which they are brought into contact, and the modes of applying them.

Forms in which Medicines are used.

Medicines are administered, in the solid state, in the shape of *powders*, *pills*, *troches*, *electuaries*, and *confections;* in the liquid state, in the shape of *mixtures* and *solutions*. Under the head of solutions are included the officinal preparations designated by the names of *infusions*, *decoctions*, *wines*, *tinctures*, *vinegars*, *syrups*, *honeys*, and *oxymels*. Medicines

This is a modification of the common wine measure, the gallon & pint being the same as those in common use. The British Pharmacopœias have lately adopted the Imperial pint of twenty fluid ounces as their standard. Their gallon & pint therefore contain one fourth more than the common gallon and pint; but the fluid ounce and smaller measures are the same as those of the U.S.P. The minim is intended as a substitute for the "drop" which is considerably modified by the fluidity of the liquid, the size & thickness of the surface from which it falls, and the fullness of the containing vessel. Measures sufficiently exact for common use and always at hand are as follows:

A cupful	f℥ iv. to v.	A coffee or dessert sp'ful	f℥ iij.
A wineglassful	f℥ jss. to j.	A teaspoonful	f℥ j.
A tablespoonful	f℥ ss.	A drop [25 drops of laudanum = mxv.]	

1. Absorption takes place into the blood vessels by endosmosis; it is promoted by rapidity of the circulation without inordinate distension of the vessels or fluidity of the blood.
2. Thus Ipecac: by a specific action on the stomach causes vomiting— rhubarb & castor oil promote the peristaltic motion of the bowels— Senega stimulates the aërian membrane— cantharides cubebs, & copaibia the mucous membrane of the urinary passages, & calomel promotes the salivary & biliary secretions.
3. In tetanus immense doses of opium are given with impunity, & in Yellow fever it is very difficult to produce mercurial salivation.
4. The influence of some medicines is diminished by their habitual use, as opium, tobacco, alcohol, & pungatives generally. The stomach becomes more susceptible of the effects of emetics by repetition; but this is owing to an irritable condition (similar to that known in inflammation) being

induced, independent of nervous susceptibility and it therefore can hardly be called an exception to the rule. This appears to be shewn moreover by the fact that by a cautious & gradual increase of the dose, the stomach may be made to bear a very large quantity of tartar emetic; and in the treatment of pneumonia it is made available.

5. Age modifies chiefly the doses of medicines. No rule for the regulation of doses is of much value, as they must be modified to suit the strength & development of the patient. Dr. Young has established the following: "At twenty one the full dose - for ages less than twenty "one the dose must be to the full dose as the age to the "age increased by twelve" Thus let d = the full dose, a = age and x = dose required; then will $x : d :: a : a+12$, or $x = \frac{ad}{a+12}$

6. Females possess more excitability of the nervous & vascular system than males; they therefore require smaller doses of medicines. Drastic purgatives should be avoided during the periods of menstruation, pregnancy and lactation. And in the two last medicines possessing injurious properties liable to absorption should be avoided.

7. Temperaments are peculiarities resulting from greater or less proportionate development of particular organs in different classes of individuals.

8. Idiosyncrasy expresses a functional peculiarity unconnected with development of organs. Thus some persons are very susceptible to the effects of opium or calomel whilst others can scarcely feel their influence. The odour of Ipecacuanha or of hay will in some individuals bring on an attack of asthma which will cease on the removal of its cause. [The smell of the rose is said to cause sneezing in a certain family formerly of Beaufort S.C. - T.J.]

are also used in the form of *liniments*, *cerates*, *ointments*, *plasters*, and *cataplasms*. Each of these forms of preparation commented on. For all essential information in relation to them, the student is referred to the U. S. Dispensatory, the Index of which will point out the place where he may find them treated of. Besides the forms above mentioned, medicines are sometimes applied in the state of vapour.

Parts to which Medicines are applied, and modes of applying them.

1. The *stomach;* but on this it is not requisite to enlarge.

2. The *rectum.* To this part medicines are applied with two objects—*first*, to produce alvine evacuation, *secondly*, to obtain their peculiar impression upon the system. In the latter case, as it is desirable that the medicine should remain in the bowels, it should generally be given in a small bulk, and may often be advantageously combined with opium to prevent irritation and consequent purging. In both cases, the first impulse to evacuate the bowels should be resisted; and the operator should assist the efforts of the patient, when requisite, by pressing a warm folded towel against the part.

The quantity of medicines administered by the rectum, with a view to their peculiar action, is, as a general rule, about three times their ordinary dose; but as the relative susceptibility of the rectum and stomach is not always the same, it is best to begin with less than this proportion, when the medicine is very active. It is possible, moreover, that, while the susceptibility of the stomach is diminished by the frequent use of any particular medicine, that of the rectum may remain comparatively unimpaired; so that in cases where very large doses of an active medicine are habitually swallowed, it would not be proper to hazard the administration of a triple quantity per anum.

Medicines introduced into the rectum in the solid state are called *suppositories*—in the liquid, *clysters*, *injections*, or *enemata*. The mode of applying suppositories requires no comment. Enemata are either fluid, or composed of solid matter diffused in a liquid vehicle. In the latter case, it is important that the medicine, especially when irritating, should be equally diffused. Water is generally used as the vehicle. If an insoluble substance is to be suspended in it, some mucilaginous, saccharine, or other viscid body should be added. The quantity of the vehicle should vary with the nature of the medicine and the effects to be produced. If the enema is to be retained, the quantity should be as small as is compatible with convenient administration. If intended to operate upon the bowels, the bulk should be larger. One or two fluidounces in the former case, and a pint in the latter, are about the proper mean proportions for an adult.

3. The *skin.* The modes of application are numerous. As regards the skin itself, the cuticle may be retained or removed; as regards the medicine, it may be used in the form of vapour, that of liquid, or that of a soft solid, and may come in contact with the whole surface of the body or only a part.

Modes of applying vapour described.

Liquids are applied by lotion, bath, semicupium, or pediluvium. Observations on each of these modes.

Solids are applied by simple contact, in the form of cataplasms, ointments, cerates, and plasters; or by the aid of friction, in a soft or semifluid state; or to the surface deprived of the cuticle. The last is the most efficient mode of affecting the system through the surface. Almost all remedies which act in small doses, and are not very irritating or corrosive, may be used in this way. The circumstances under which it is proper to resort to the *endermic* method of administering a medicine, are, 1. an unwillingness of the patient to swallow or inability to retain it, 2. the liability to an injurious degree of irritation from its internal use, 3. the loss of the susceptibility of the stomach to its action from frequent repetition, 4. the necessity in which we may be placed of endeavouring to introduce it into the system by every accessible passage, and 5. the existence of violent or obstinate local affections, in which it is desirable to apply the medicine as near to the seat of disease as possible. The cuticle may be most conveniently removed by means of a blister, which may be from two to four inches square. The best positions are in general the epigastrium, or the inner parts of the extremities. Sometimes the immediate vicinity of the disease may be preferable; and sometimes a position over the course of the absorbents which run into the part affected. The medicine may be sprinkled on the denuded surface in the form of powder, either undiluted, or, if of an irritating nature, mixed with wheat flour or arrow-root. It may also be applied in the form of ointment, or, if in the liquid state, by means of pledgets of lint. The dose should be twice or three times that which would be requisite by the mouth.

4. *Bronchial tubes and pulmonary air-cells.* Substances applied to these parts are usually in the form of gas or vapour. Fine powders have been thrown into the lungs by being mixed with the inspired air; but this plan is not recommended.

Inhalation is effected either by diffusing the gas or vapour through the air respired by the patient, or by confining it in a bag furnished with a suitable tube through which the patient may breathe, or by means of an instrument called an inhaler.

Instruments for facilitating inhalation exhibited and described.

5. *Nostrils and adjoining cavities.* Medicines applied to this surface probably act in general by the strong sympathies which connect the organ of smell with other parts of the system. Two purposes are answered—1. a powerful excitement of the brain in cases of insensibility from want of cerebral action; 2. a strong revulsion from neighbouring parts.

The inside of the mouth is sometimes selected as a position for the application of remedies; but this is in reference chiefly to their local irritant action.

Attempts have been made to produce impressions upon the system through the *blood-vessels.* This plan not recommended.

Classification.

Advantages of classification stated.

Different plans recommended, according to the object proposed. That believed to be best adapted to the wants of the medical student and practitioner, is founded on the relations which medicines bear to the human system in the healthy state. Reasons for this belief stated. The following plan, founded on this basis, is adopted in the present course of lectures.

Substances used remedially act either on the living body, or on extraneous matters contained within the body, and serving as a source of disease. The former constitute the great mass of medicines, and it is to these alone, according to the definition before given, that the term medicine is strictly applicable. The latter, however, for the sake of convenience, may be considered as medicines, and are here ranked in a distinct group. The first division, therefore, is into medicines which act upon the living body, and those which act upon foreign matters contained within the body.

Of the medicines acting on the living body, there are two divisions, viz. *general remedies* which operate on some one or more of the systems pervading the whole body, and *local remedies* acting especially on particular organs.

The *general remedies* are divided into two sets, one having a stimulant or excitant, the other a sedative influence. The former are called *stimulants*, the latter *sedatives.*

Stimulants differ in the rapidity and duration of their action, some being slow and lasting, others rapid and transient. The former are called permanent, the latter diffusible stimulants.

Permanent stimulants are found to differ in one important point, some producing a constringing or contracting effect wherever they act, others exercising their permanently stimulant influence without this effect. Hence the division into the two classes of *astringents* and *tonics.*

Of the *diffusible stimulants* some act more especially on the heart and arteries, with little comparative influence on the brain and nerves, while others, together with their influence on the circulation, conjoin a decided operation upon the cerebro-spinal system. Hence the division into *arterial stimulants* and *cerebro-nervous stimulants.*

The latter of these classes may be separated into two subdivisions, founded upon the fact, that some of them produce a decided impression upon the proper cerebral functions, while others appear to act upon the nervous system at large without special tendency to the brain. These subdivisions may be named *cerebral stimulants* or *stimulant narcotics*, and *nervous stimulants*, identical with those usually denominated *antispasmodics.*

Sedatives are divided into those which affect the heart and arteries exclusively, and those which also operate upon the nervous system. Hence the classes of *arterial sedatives* or *refrigerants*, and *nervous sedatives* or *sedative narcotics.*

Local remedies are divided into those which affect the functions, those which affect the organization, and those which are mechanical in their action.

The medicines affecting the function of a part, are 1. *Emetics*, acting on the stomach; 2. *Cathartics*, acting on the bowels; 3. *Diuretics*, acting on the kidneys; 4. *Diaphoretics*, acting on the skin; 5. *Expectorants*, acting on the lungs; 6. *Emmenagogues*, acting on the uterus; 7. *Sialagogues*, acting on the salivary glands; and 8. *Errhines*, acting on the nostrils.

Medicines which affect the organization of a part are divided into 1. *Rubefacients*, which produce inflammation; 2. *Epispastics*, which excite vesication; and 3. *Escharotics*, which destroy the life of the part, and occasion a slough.

Medicines operating mechanically, include 1. *Demulcents*, which protect surfaces from the action of irritants, or mixing with these, obtund their acrimony; 2. *Emollients*, which soften and relax the skin; and 3. *Diluents*, which act by diluting the fluids of the body.

Besides the remedies included in the above classes, there are some, belonging to the first great division, so peculiar in their action, that they cannot be conveniently classified, and therefore deserve to be considered separately. These are ergot, nux vomica, arsenic, mercury, and iodine.

Medicines acting on foreign substances contained within the body, are included in the two classes of 1. *Antacids*, which neutralize acids; and 2. *Anthelmintics*, which destroy or expel worms.

Medicines arranged under their classes (See page 5.)

Class I. Astringents.

1st Vegetable astringents:

Oak bark, Galls, Kino, Catechu, Rhatany, Log wood, Cranesbill, Blackberry root, Uva Ursi, Chimaphila, —— Pomegranate rind, Rose petals, Persimmon, Tormentil, Bistort.

2nd. Mineral — Alum, Preparations of Lead.

Class. II. Tonics.

1st Pure Bitters

Quassia, Simaruba, Gold Thread, Gentian, Cabbalia, Columbo.

2nd. Bitters of peculiar or modified properties.

Cinchona, Dogwood, Wild-cherry bark, Chamomile, Thoroughwort, Virginia Snake-root, Myrrh, Angustura, Cascarilla.

3rd. Aromatics — Orange Peel, Cinnamon, Canella, Cloves, Nutmeg, Black Pepper, Cubebs, Pimento, Cardamom, Fennel, (Caraway, Coriander, Anise) — Lavender, Rosemary, Mint, (Pennyroyal, Balm, Marjoram, Wintergreen Ginger, Calamus.

4th. Mineral Tonics

The preparations of Iron, Copper, Bismuth and Silver; the mineral acids viz: Sulphuric, Nitric, Muriatic & Nitro-muriatic.

Class. III. Arterial Stimulants.

Red pepper, Oil of Turpentine, Phosphorus, Carbonate of Ammonia.

Class IV. Nervous Stimulants.

Musk, Castor, Asafetida, Galbanum, Sagapenum, Ammoniacum, Valerian, Oil of Amber, Garlic, Tea, Coffee, Skunk Cabbage.

Class V. Cerebral Stimulants.

Alcohol, Sulphuric Ether, Opium, Lactucarium, Hyoscyamus, Hops, Camphor, Belladonna, Stramonium, Bittersweet, Hemlock (i.e. Conium).

Class VI. Arterial Sedatives.

The preparations of Antimony; The Neutral, alkaline Salts, as Nitrate of Potassa; The vegetable Acids, as Vinegar, Lemon Juice, Citric Acid.

Class VII. Nervous Sedatives.

Digitalis, Tobacco, Prussic Acid.

Class VIII. Emetics.

1st Vegetable emetics.

Ipecac, Gillenia, Lobelia, — Euphorbia ipecacuanha, E. corollata, Blood-root, Squill, Tobacco, Mustard

2nd. Mineral Emetics.

Tartar emetic, Sulphate of Zinc, Sulphate of Copper.

Class IX. Cathartics.

1st Vegetable Cathartics.

Manna, Saccharine & acidulous fruits, Cassia Pulp, Castor Oil, Rhubarb, Senna, American Senna, Extract of Butternut, Aloes, Jalap, May Apple (i.e. Podophyllum) Scammony, Hellebore, Colocynth, Gamboge, Elaterium, Croton Oil.

2nd Mineral cathartics.

Sulphur, Carbonate of Magnesia, Magnesia Sulphate of Soda, Sulphate of Magnesia, Sulphate of Potassa, Bicarbonate of Potash, Tartrate of Potassa, Tartrate of Soda & Potassa, Phosphate of Soda, Calomel, — Enemata.

Class X. Diuretics.

Fox Glove, Squill, Colchicum, White Hellebore, & American Hellebore, Indian Hemp (i.e. Apocynum)

Dandelion, Juniper Berries, Erigeron, Wild carrot, Parsley-root, Turpentine, &c, Copaiba, Cantharides, Carbonate & bicarbonate of Potassa, acetate of Potassa, Bi~~carbon~~tartrate of Potassa, Nitrate of Potassa, Spirit of Nitric Ether.

Class XI. Diaphoretics.

1st Nauseating Diaphoretics.

Ipecacuanha, Tartrate of Antimony and Potassa.

2nd Refrigerant Diaphoretics.

Citrate of Potash, Acetate of Ammonia, Nitrate of Potassa, Spirits of Nitric Ether.

3rd Alterative Diaphoretics XII.

Guaiacum, Mezereon, Sassafras, Sarsaparilla.

Class XII. Expectorants.

Squill, Garlic, Seneka snake-root, Black snake-root, Ammoniac, Asafatida, Tolu, Bal. of Peru.

Class XIII. Emmenagogues.

The Preparations of Iron, Aloes, Hellebore, Seneka snake-root, Guaiacum, Savine, Canthariles.

Class XIV. Sialagogues.

Irritants of any kind, Pyrethrum.

Class. XV. Errhines.

Acrid Powders.

Class. XVI. Epispastics.

Canthariles, Potato Fly.

Class XVII. Rubefacients.

Mustard, Red Pepper, Oil of Turpentine, Burgundy pitch, Canada pitch, Spts. of Hartshorn.

Class. XVIII. Escharotics.

Caustic potash, Lunar caustic, Arsenious acid, Sulphate of copper, Corrosive sublimate, Burnt Alum, The mineral acids.

Class XIX. Demulcents

Gum Arabic, Gum Tragacanth, Slippery Elm,

~~Class X. Farinaceous~~

Liquorice, Iceland Moss, Irish Moss, Sago, Tapioca, Arrow Root, Barley

Class XXI. Emollients.

Described under other Classes.

Class XXII. Diluents.

Water, Mild liquids of any kind.

Class XXIII. Medicines belonging to the first great division; not capable of being arranged under any of the preceding classes.

Ergot, Nux Vomica, The Preparations of Arsenic, The preparations of Mercury, & of Iodine.

Class XXII. Antacids.

Carbonate & Bicarbonate of Potassa, Carbonate and Bicarbonate of Soda, Ammonia, Lime Magnesia.

Class XXIV. Anthelmintics.

Spigelia, Aegedarach, Jerusalem Oak, Male Fern, Cowhage, Pomegranate root, Oil of Turpentine. Tin.

TABULAR VIEW OF THE CLASSIFICATION.

I. Substances which act on the living body.
- 1. General remedies.
  - Stimulants.
    - Permanent stimulants.
      - Astringents.
      - Tonics.
    - Diffusible stimulants.
      - Arterial stimulants.
      - Cerebro-nervous stimulants.
        - Nervous stimulants, commonly called antispasmodics.
        - Cerebral stimulants, or stimulant narcotics.
  - Sedatives.
    - Arterial sedatives, or refrigerants.
    - Nervous sedatives, or sedative narcotics.
- 2. Local remedies.
  - A. Affecting the functions.
    - Emetics.
    - Cathartics.
    - Diuretics.
    - Diaphoretics.
    - Expectorants.
    - Emmenagogues.
    - Sialagogues.
    - Errhines.
  - B. Affecting the organization.
    - Rubefacients.
    - Epispastics.
    - Escharotics.
  - C. Operating mechanically.
    - Demulcents.
    - Emollients.
    - Diluents.
- 3. Medicines insusceptible of classification with others.
  - Ergot.
  - Nux vomica.
  - Arsenic.
  - Mercury.
  - Iodine.

II. Substances which act on foreign matters contained within the body.
- Antacids.
- Anthelmintics.

CLASS I.

ASTRINGENTS.

General Observations.

Defined to be medicines which produce contraction of the living tissues.

Their action explained. Every living tissue is possessed of contractility which requires only the appropriate stimulus to call it into action. This is afforded by astringents. Their operation is entirely vital, and independent of chemical or mechanical laws.

Their effect in parts to which they may be directly applied is obvious. Their action may extend also over the system, but is then less evident.

General effects from astringents—greater firmness of muscle; diminished calibre and greater rigidity of blood-vessels and absorbents, and consequently a harder and more contracted pulse; diminution or closure of secreting orifices, and consequently diminution of secretion. Some assert that they render the blood thicker and its coagulum firmer.

They produce moderate and permanent excitement of the organic life, but have little influence over the nervous system, or the functions of animal life.

Indicated in unhealthy discharges from the blood-vessels, whether hemorrhagic or by secretion, and in cases generally which depend on relaxation of the tissues.

1. Unhealthy discharges.

Here they operate by closing the secreting or bleeding orifices. They are not, however, applicable to all cases indiscriminately—only to those in which the discharge depends on weakness of the blood-vessels, or in which it is merely local or sustained by habit after the disappearance of the original cause, or when it is so profuse as to render its suppression desirable at the risk of aggravating the morbid condition in which it had its origin.

Contra-indicated by the existence of any morbid condition of which the discharge is a mere effect, and which it is calculated to relieve, and by the existence of any considerable local or general excitement.

In cases of excitement, if it be desirable to suppress a discharge, the use of astringents should, as a general rule, be preceded by bleeding or other depleting measures.

The particular complaints to which astringents are applicable, under this indication, are diarrhœa, chronic dysentery, diabetes, catarrh of the bladder, excessive sweating, sometimes, perhaps, dropsical swellings depending on relaxation, and all the hemorrhages. In all these cases, however, it is necessary to bear in mind the contra-indicating circumstances already mentioned.

Explanatory remarks.

2. Disorders connected with relaxation of the tissues.

These often consist in morbid discharges, in which case they fall under the preceding head. Sometimes, however, the system is left after acute diseases in a state of relaxation, in which astringents are useful, particularly in combination with tonics, even when no unhealthy discharge exists.

In chronic complaints such a condition also occasionally exists, either original or induced—as in scrofula and rickets.

The external use of astringents is governed by the same rules with some modification.

Applicable in cases of increased mucous secretions, after the subsidence of inflammatory action, as from the urethra, vagina, rectum, and nostrils—of excessive perspiration—of hemorrhages from parts within reach—and in cases of local relaxation, as in various venous distentions, prolapsed anus, uterus, and uvula, and flabby ulcers.

Their local application is admissible under circumstances in which their internal use would not be justifiable; as, in the former mode, more of their proper astringent effect is obtained, with much less of their general stimulation.

Locally used, astringents are sometimes beneficial even in cases of actual inflammation. They probably do good by producing contraction of the capillaries, and thus expelling the blood. But for this purpose, as a general rule, they are applicable only in the commencement of the inflammation, before the excitability has been much increased, or in the latter stages after it has become in some measure exhausted.

Astringents may be divided into two sections—the vegetable and mineral, the former having a certain identity of character depending on similarity of composition, the latter agreeing only in the possession of the common property of astringency.

1. [Page 5] Tannic acid or tannin is obtained most commonly by the method of Seloupe: pack finely in a conical tube the galls coarsely powdered, & stop the lower end with cotton, then pour on aqueous ether obtained by agitating sulphuric ether with water; the upper end should be stopped to prevent the evaporation of the ether; the apparatus should then be allowed to remain until the ether has filtered through. The filtered liquid consists of two layers, the heavier of which is a concentrated solution of tannic acid. This is evaporated to dryness and washed with water. Tannic acid thus obtained is colourless or light yellow - nearly pure - astringent without bitterness - soluble in water & alcohol slightly so in ether - on exposure becomes gallic acid by absorbing oxygen - causes a bluish black precipitate with salts of iron, a white one with gelatine - also precipitates the vegetable alkalies. Tannic acid from kinos & some other substances is a modification of and in colour and does not become gallic acid. The medicinal effect of tannic acid, is purely astringent. It is used in hemorrhages from the uterus, lungs, & rectum, and in profuse mucous discharges as in diarrhea, catarrh, leucorrhea & gonorrhea.

Quercus Tinctoria, Ga. oak.

2. White oak bark - epidermis white - bark coarse fibrous - odour slight - tannin like that of galls - yields its virtues to water & alcohol.
3. Black oak bark - colour dark - taste more bitter than the white - tinges the saliva yellow - has the same position
4. Pure astringent - seldom used internally - intermittents
5. Externally the decoction is used as an injection for leucorrhea, & relaxation of the rectum either with or without hemorrhoids - as a lotion for edematous swellings and indolent ulcers - bath in intermittent
6. Decoction - ℥ij in a quart of water boiled to a pint.

5. For internal use

7. Acorns - castid, ground & made into a kind of coffee in the usual manner, are used in some parts of Europe for scrofulous affections - dose of the coffee ʒ ss.

Galls.

1. Small species of oak 4 to 6 feet - Asia Minor & India.
2. An insect pierces the tender shoots & deposits an egg, & juice exuding, concretes around the egg & forms a nidus from which a worm in time escapes.
3. Aleppo and Smyrna galls are both from Smyrna.
4. Size from a cherry to a marble - globular - surface tuberculated.
5. The blue are gathered before the insect has escaped, are more compact in texture & heavier. The white are light yellow - of little weight & pierced by a hole through which the worm came forth - not so valuable as the blue.
6. Yield their virtues to water & alcohol.
7. Metallic salts - infusions of vegetable substances which contain an organic alkali as cinchona - opium &c, alkalies, mineral acids especially sulphuric - the alkalies generally & their carbonates except the carbonate of soda.
8. Purely astringent - little used except as a chemical test - have found it useful in typhus fevers depending on relaxation. Infusion used as an antidote for poisoning by antimony & some alkalies. Ointment ʒ ss to lard ʒ vij used, used for piles, & prolapsus Ani of children.

Kino.

1. African from Pterocarpus erinaceus. Jamaica from Coccoloba uvifera or seaside grape. Botany bay from Eucalyptus resinifera. East Indian sorts unknown.
2. East India kino occurs in small angular, shining fragments almost black-powder reddish brown - astringent, bitter, brittle - imparts virtues to water & alcohol. Jamaica kino in masses not so dark as E. I. variety. Caracas probably same as Jamaica.
3. All cases requiring astringents - diarrhoea - hemorrhage from

The vegetable astringents owe their peculiar properties to a proximate principle called tannin or tannic acid, which is found in all of them. They differ only in the proportion of this principle, and in the character of the other ingredients with which it is associated.

1. The sensible and chemical properties of *tannic acid*, its relations with other medicinal substances, and its medical properties and applications described. Dose, 3 grains every 3 or 4 hours.

In relation to mineral astringents, as they have nothing in common which does not belong to the whole class, each being distinguished by peculiar properties, no general observations are required.

1. *Vegetable Astringents.*

WHITE-OAK BARK.—QUERCUS ALBA. *U.S.*
BLACK-OAK BARK.—QUERCUS TINCTORIA. *U.S.*

Oak bark derived from different species of Quercus. *Quercus alba* or white oak, and *Q. tinctoria* or black-oak, the species officinally recognised in this country.

2. Description of white-oak bark. Its sensible properties and relations to water and alcohol. Chief ingredient, tannic acid, which is most abundant in the inner bark, and in that gathered in spring.

3. Description of black-oak bark. Its sensible properties and relations to water and alcohol. Chief ingredients, tannic acid and a colouring principle called *quercitrin*.

4. Medical properties and internal use.
Black-oak bark less disposed to occasion constipation than white-oak bark. Sometimes even laxative. Both more used externally than internally.

5. Particular applications as external remedies.

6. Used in powder, decoction, and extract. Dose of the powder, 30 grains; of the decoction, f℥ij.; of the extract, 20 grains.
Other parts of the oak possessed of similar properties; but more feeble. The leaves and acorn cups may be substituted for the bark.
Acorn highly astringent, but also more bitter. Uses, and mode of preparation.

7. . . . . .

GALLS.—GALLA. *U.S.*

Excrescences on the young branches of *Quercus infectoria* and other species.

1. Locality and description of the tree.

2. Mode in which the gall is produced.

3. Brought from the Levant and the East Indies.

4. General characters, including size, shape, and nature of surface.
Two varieties—*blue galls* and *white galls*. Difference between them.

5. Sensible properties, and relations to water and alcohol.
Most interesting ingredients, tannic and gallic acids. Virtues depend chiefly on the former.

6. Substances with which galls afford precipitates, and with which they are incompatible in prescriptions.

7. Medical properties and uses. Chiefly employed externally.

8. Used in powder, infusion, or decoction. Dose of the powder, 10 to 20 grains; of the infusion, made in the proportion of half an ounce to a pint, f℥ij.
A tincture directed by Ed. and Dub. Pharm.—Dose f℥j. to f℥iij. More used as a test than as a medicine.

KINO. *U.S.*

Varieties.—1. African kino; 2. Jamaica kino; 3. Botany Bay kino; 4. East India, or Amboyna kino.

1. Supposed source of each variety.
The East India kino most used—obviously an extract.

2. General characters of kino, including shape and size of the fragments, nature of the surface, colour of the powder, &c.—sensible properties—relations to water and alcohol.
Interesting ingredients, tannic acid and extractive. Virtues depend on the tannic acid, which is of the variety that affords a dark greenish precipitate with sulphate of iron.
Incompatibles same as those with galls.

3. Medical properties and uses. One of the vegetable astringents best adapted for internal use.
Used in powder, infusion, and tincture. Dose of the powder, 10 to 30 grains—of the infusion, made in the proportion of 2 drachms to 6 fluidounces, from f℥ss. to f℥iss.
Objection to the tincture.

CATECHU. *U.S.*

Extract of the wood of *Acacia Catechu*—perhaps also from other sources.

1. Locality and description of A. Catechu.
2. Mode of preparing catechu, its aspect, colour, odour, taste, fracture, and other physical properties—the colour of its powder, and its relations to water and alcohol.
3. Impurities.
   Chief ingredient, tannic acid like that of kino, with a little extractive.
   Chemical relations the same as those of kino.
   Dark coloured catechu said to contain most tannic acid.
4. Medical properties and uses.
   Kino preferable for internal use, as purer.
   Used in powder, infusion, and tincture. Dose the same as that of kino. Dose of the tincture from f℥ss. to f℥iij.

RHATANY.—KRAMERIA. *U.S.*

Root of *Krameria triandra.*

1. Character of the plant and place of its growth.
2. Form of the root—sensible properties—difference between the cortical and ligneous portions—colour of the powder—relations to water and alcohol, and the colour imparted by it to these liquids.
   Active ingredient, tannic acid resembling that of kino.
3. Medical properties and uses essentially the same as those of kino and catechu. Recently much used, particularly in uterine hemorrhage.
4. Used in powder, infusion or decoction, tincture, and extract. Dose of the powder, 20 to 30 grains—of the decoction or infusion, made in the proportion of an ounce to a pint of water, from f℥j. to f℥ij.—of the tincture from f℥j. to f℥ij.
   The extract made by evaporating the infusion or tincture. Injured by long boiling. Dose, 10 or 15 grains.

LOGWOOD.—HÆMATOXYLON. *U.S.*

Wood of *Hæmatoxylon Campechianum.*

1. Character of this tree and place of its growth.
2. State of the wood as imported, and as kept in the shops.
3. Sensible properties of logwood, and relations to water and alcohol. Effect of exposure on the colour.
4. Characteristic ingredient, a peculiar colouring principle called *hematin.*
5. Medical properties and uses.
   Employed in decoction and extract. Dose of the decoction f℥ij.—of the extract 10 to 30 grains.

CRANESBILL.—GERANIUM. *U.S.*

Root of *Geranium maculatum*—an indigenous perennial herbaceous plant, growing in woods.

1. Shape and general aspect of the root, its sensible properties, and relations to water and alcohol.
   Active ingredient, tannic acid.
2. Medical properties and uses.
   Given in powder and decoction. Dose of the powder 20 to 30 grains—of the decoction made by boiling one ounce in a pint and a half of water to a pint, from f℥j. to f℥ij. Sometimes boiled in milk.

BLACKBERRY-ROOT.—RUBUS VILLOSUS. *U.S.*
DEWBERRY-ROOT.—RUBUS TRIVIALIS. *U.S.*

Roots of *Rubus villosus* and *R. trivialis*—similar in medical properties.
Both plants indigenous—former an erect prickly shrub—latter a creeping briar.

1. Shape and aspect of the roots. Virtues chiefly in the cortical part. Smallest roots, therefore, best. Sensible properties and relations to water and alcohol.
   Active ingredient, tannic acid.
2. Medical properties and uses.
   Usually given in decoction—made by boiling one ounce in a pint and a half of water to a pint. Dose f℥j. to f℥ij. Dose of the powder 20 or 30 grains.

UVA URSI. *U.S.*

Leaves of *Arbutus Uva Ursi* or bear-berry, a small, trailing, evergreen shrub, indigenous in the northern parts of the old and new continents, and growing in the United States as far south as New Jersey.

1. Distinguishing characters of the dried leaves—colour, smell, and taste—colour of the powder—relations to water and alcohol.

the bowels &c. if not exist in stomach, combine with chalk. often combined with opium [Pulv: Kino Comp: R Kino ℥xv. Cinnamomi ℥ss. Opii ℥j M. — Dose grs. v to ℈j — Chronic diarrhœa, dysentery &c. Twenty grains contain one of opium.

Catechu.

1. Hindostan & Jamaica. The small-wood kind & bark.
2. Extract of the wood — rusty reddish brown — odour none — astringent bitter — fracture in layers — yields virtues to water & alcohol.
3. Husks, leaves & sticks intermixed, also gravel.
4. Same as Kino. [Relaxed sore throat chewed or sucked.] Slight ulcerations, mouth & hoarseness]

Rhatany.

1. Procumbent shrub — South America — sandy soils.
2. Long, slender pieces, without branches — little odour, taste astringent, somewhat bitter & sweetish — cortical portion contains more astringent matter; ligneous is pale red, & hard; cortical is reddish brown — powder reddish brown — imparts virtues to water & alcohol producing a very deep colour.
3. [Tooth powder (Rhatany, Orris, & Charcoal equal parts)]
4. Extract the best preparation. Tincture inconvenient. Decoction, reduces from the action of tannin an insoluble and inert substance. Syrup of the extract (U.S.P.) is agreeable.

Logwood.

1. Large tree 50 ft — Campeachy — Honduras — Jamaica.
2. Logs of the heart wood 3 feet long — chips or sawings in shops.
3. Hard, compact, heavy, dark red colour becomes dark on exposure — taste sweetish astringent & long pleasant. Water yields its properties to water & alcohol. Decoction bright red — acids brighten it — alkalies change it to purple or violet-blue.
4. Hematine is crystalline red, astringent, acrid, somewhat bitter — allied to tannin, precipitates salts of iron (black) but not gelatine.
5. Mild astringent — diarrhœa, hemorrhage & leucorrhœa —

particularly when stimulation is to be avoided - as in the diarrhœa succeeding cholera infantum.

Cranesbill.

1. Root much & arched gibbous - in the Ph. pieces one or two inches long & one fourth thick - corrugated, rough, brown, odour feeble, taste bitter & astringent - powder gray - imparts its prop. to water & alcohol - gathered in Autumn.
2. Astringent & medium power - used as other astringents.

Blackberry & Dewberry.

1. Branching round & long - from an inch to a line in thickness. Cortical part ash brown, astringent, bitterish; ligneous part yellowish white inert. Yields its properties to water & al.
2. A domestic remedy in bowel complaints - mild astringent.

Uva Ursi.

1. Leaves often mixed of Chimaphila & Vaccinium - the genuine have their edges entire & their under surface reticulated - whereas the edge of Chimaphila are coarsely toothed & under surface plain - of Vaccinium edges finely serrated & under surface dotted. The dried leaves are greenish & shining - odour like hay (more when fresh) - taste bitterish, astringent, then sweetish - powder grayish green - imparts virtues to water & alcohol.
2. Chiefly in diseases of the urinary passages. [Chronic affections of the bladder with increased secretion of mucus & acid inflammation.] At the end of the last century it had a most extravagant reputation as a dissolver of urinary calculi and a cure for phthisis pulmonalis. It acts slowly, and if expected to be beneficial, perseverance is necessary.
3. [Powder objectionable on account of its bulky dose. Extract recognized by the London & U. S. Pharmacopœias - said to be an agreeable form. Dose from 5 to 15 grains twice or thrice daily.

Ericaceæ.

1. Leaves coarsely serrate smooth shining = those of the Chimaphila maculata a species found in the Southern states are marked on the upper surface by irregular blotches of white, they possess the same medical virtues - colour dirty green, smell little, taste pleasantly bitter and astringent, sweetish - impart their virtues to water and alcohol.
2. A valuable remedy - appears to meet the indications of scrofula - to be used for a long time, the bowels being kept open by salts - much valued by Dr. Parish. Used also in chronic urinary disorders, & in dropsies both from its diuretic & tonic qualities.]

Miscellaneous Vegetable Astringents.

1. Rind of pomegranate may be used internally & externally, as a substitute for other astringent in diarrhœa &c.
2. Petals of red rose buds deprived of their white claws - slightly astringent, but not so as to render this property of any value. Its preparations afford elegant & convenient vehicles for the administration of other medicines: Confection of roses prepared by incorporating the petals into a mass with sugar (mixed with honey & rose water U.S.P.) is an excellent basis for pills, electuaries &c. Blue mass is mercury extinguished by means of this confection or conserve it is often called. Infusion of roses is a mild refrigerant astringent drink in fevers, colliquative sweats &c. It forms an elegant vehicle for saline purgatives bitter tinctures, sulph. quinine, from containing sulph. acid, and many other medicines. On account of this acid, the alkalies, ca. ths, & their carbonates, carb. iron & acetate of lead are incompatibles.
2. Rose water is added to collyria, lotions &c merely on account of its pleasant odour.

2. Mineral Astringents.

Alum.

1. Crystals octohedrons – slightly efflorescent on exposure – whitish, translucent – dissolve in 18 times its weight of cold, less than its weight of boiling water – heat causes watery fusion the water evaporate, alum swells up forms white spongy mass called <u>dried alum</u> – incompat: are alkalies, alkaline earths and their carbonates
2. Coagulates and contracts skin externally applied – locally applied to hemorrhages from nose mouth & mucous membrane generally – gargle for relaxed state of uvula and mucous membrane of throat – to check profuse ptyalism injection & local application for uterine hemorrhage: Internally – lead colic – dose a scruple to two drachms dissolved in gum water or some demulcent every three or four hours – Opium & camph: may be combined – Passive hemorrhages, colliquative sweats, gleet, gonor: & leucorr: – in the three last may combine with cubebs.
3. Alum rubbed with white of eggs makes alum curd for ophthalmia & unbroken chilblains – Whites of 2 eggs alum ℥j.
4. Alum in powder ℥ij Milk O.j. – boil and strain dose a wineglassful
5. Not too much heat lest the acid be driven off – mild escharotic, for spongy granulations (proud flesh)

Lead.

1. Preparations in small doses astringent sedatives – long continued affects muscular and nervous system – Lead colic and paralysis. In very large doses cause inflam: irritant poison – their continued use produce a blue line on the gums, with rigidity & salivation.
2. 1st Irritant poison in large doses – treatment diluents containing a sulphate (as sulph: soda or magnesia) to form sulph: of lead, also emetics as white or blue vitriol. 2nd Colic – treatment alum, mercury, purgatives & anodynes. 3rd Paralysis – strychnia, nux vom:

Active ingredients, tannic acid and bitter extractive.

Medical properties, those of an astringent and mild tonic, with a tendency to act especially on the urinary organs, but without materially increasing the secretion.

2. . . Particular applications in disease.

3 . . Used in powder and decoction. Dose of the powder, from gr. xx. to ʒj., 3 or 4 times a day—of the decoction from fʒj. to fʒij. at the same intervals.

PIPSISSEWA.—CHIMAPHILA. *U. S.*

Leaves and stem of *Chimaphila umbellata* or wintergreen—a small, indigenous, evergreen plant, growing in the north of Europe, Asia, and America, and abundant in the United States—inhabiting the woods.

1 . . . Distinguishing characters of the leaves—colour, smell, and taste—relations to water and alcohol.

Active ingredients, tannic acid and bitter extractive.

Medical properties, those of a gentle astringent and tonic, with a direction to the urinary organs, upon which it sometimes acts as a diuretic. Therapeutical applications.

2. Given in decoction, made by boiling two ounces in three pints to two. Dose, a small teacupful 3 or 4 times a day.

An extract may be given in the dose of 20 or 30 grains four times a day.

The following vegetable astringents also spoken of.

1. . . *Rind of the Pomegranate—Granati Fructûs Cortex. U. S.*

2. . . *Unexpanded petals of the red rose—Rosa Gallica, U. S.*—with its preparations—the confection of roses (*Confectio Rosæ, U. S.*), and the compound infusion of roses (*Infusum Rosæ Compositum, U. S*).

3 . . Incidental remarks on *Rosa centifolia*, or hundred leaved rose, and its distilled water, called *rose-water* (*Aqua Rosæ, U. S.*) with the *Unguentum Aquæ Rosæ, U. S.*, prepared from it.

Bark and unripe fruit of the Persimmon—Diospyros Virginiana.

Tormentil—root of *Tormentilla erecta.*

Bistort—root of *Polygonum Bistorta.*

2. *Mineral Astringents.*

ALUM.—ALUMEN. *U. S.*

Chemically, a sulphate of alumina and potassa.

Salts essentially similar in medical properties are formed with sulphate of alumina by ammonia and soda.

Sometimes native—more frequently prepared from ores, or by a direct combination of its constituents.

1 . . . Shape of crystal—effect of exposure—colour and taste—solubility in water—effects of heat—chemical incompatibles.

2. . . Effects on the system, and therapeutical application both internally and externally.

3. . . Alum curd as a local application.

A solution containing from 15 to 20 grains to the fluidounce of water, used as a gargle.

Given internally in powder, pill, or solution.

Dose 5 to 15 grains every three or four hours, or less frequently.

4. . . Alum whey as a form for internal use.

5 . . . Dried alum an escharotic.

LEAD.—PLUMBUM.

Metallic lead probably inert.

General effects of its preparations considered under the two heads—1st, of their local irritant action—2d, of their peculiar specific action.

The two in some degree incompatible; as, when lead is applied so as to occasion much irritation, its absorption is impeded, and its peculiar influence on the system thus prevented.

The preparations of lead characterized by the union of astringency with a sedative power.

1 . . Description of its effects.

2. . . Poisonous action of lead. Fatal consequences may result both from the irritant action of the preparations of lead, and from its peculiar influence upon the system. The former event is more likely to ensue from large quantities taken at once—the latter from smaller quantities gradually insinuated into the system, and applied for a considerable time.

The only preparation not poisonous is probably the sulphate, which is thought to be inert from its great insolubility.

Treatment in cases of poisoning by preparations of lead. The sulphate of soda or sulphate of magnesia is the best antidote.

Preparations of lead employed—1. semivitrified oxide or litharge, 2. carbonate, 3. acetate, 4. sub-acetate.

LITHARGE.—PLUMBI OXIDUM SEMIVITRIUM. *U. S.*—Preparation—aspect—colour—smell and taste—solubility—chemical nature—impurities. Not used internally. Chiefly employed in the preparation of the *lead plaster* (*Emplastrum plumbi*, *U. S.*)

Preparation of the lead plaster. Explanation of the chemical agencies concerned. Description. Uses.

CARBONATE OF LEAD.—PLUMBI CARBONAS. *U. S.*—Also called *white lead*, formerly *cerusse*. Preparation—general aspect—sensible properties—solubility. One of the most poisonous salts of lead. Most common source of painters' colic. Seldom or never used internally. External employment. Modes of application.

ACETATE OF LEAD.—PLUMBI ACETAS. *U. S.*—Called also *sugar of lead* or *saccharum saturni*. Preparation—chemical composition—shape and appearance of crystals—effects of exposure—sensible properties—solubility in water and alcohol—appearance upon solution in common water, its cause, and mode of prevention.

Incompatible substances numerous—the most important, sulphuric, muriatic, and phosphoric acids and their soluble salts, the soluble carbonates, the alkalies, lime-water, vegetable astringents, and certain mucilages.

May be given safely in moderate doses not too long continued. In large quantities it is an irritative poison, in smaller, too long persevered in, it produces the peculiar poisonous effects of lead.

Diseases in which it is most useful, hemorrhage from the lungs and uterus, diarrhœa and dysentery. An advantage, that it is at the same time astringent and sedative. Hence given in the early stages. Usefully combined with opium. Dose, half a grain to three grains every hour, two, or three hours. Given in pill made with crumb of bread, or dissolved in water with the addition of vinegar.

Much used externally. Applied in this way, has the double effect of restraining discharges, and directly reducing inflammatory action—and hence may be used when other astringents are contraindicated. Complaints in which it is used externally. Employed in the state of solution. For application to the mucous surfaces, from 1 to 2 grains may be dissolved in a fluidounce of water, to the sound skin, ʒij. in Oj.

SOLUTION OF SUBACETATE OF LEAD.—LIQUOR PLUMBI SUBACETATIS. *U. S.*—Also called *Goulard's extract of lead*. Preparation, chemical nature and sensible properties. Decomposed by whatever decomposes the acetate, and in addition by carbonic acid, gum, and starch. Effects of exposure to the air.

Employed externally to reduce inflammation. Said to have produced local palsy. Diluted before application—fʒij. or fʒiij. to a pint of water.

The cerate of subacetate of lead—Ceratum Plumbi Subacetatis, *U. S.*—commonly called *Goulard's cerate*, prepared from this solution. An excellent application to inflamed and abraded surfaces. The best remedy for blisters indisposed to heal.

Besides the preparations of lead, those of some other metals are astringent—as of *zinc* and *iron*—but they are possessed also of other properties which classify them elsewhere. Thus also with *sulphuric acid*, and with some of the preparations of *lime*.

1. — litharge. Prepared from massicot (which is the fused lead) by exposing it to a red heat. Reddish-red or yellowish scales (red tint owing to minium) — smell taste-metallic styptic — almost insoluble in water — a protoxide of lead — contains some binoxide or minium & carbonate.
2. Lead plaster or diachylon is prepared from the action of heat on olive oil (oleate & margarate of glycerin) litharge and water. The oleic & margaric acids unite with the litharge forming oleate & margarate of lead or diachylon — the glycerin remains dissolved in the water — the use of the water is to moderate the heat & favour the chemical action.
3. Lead plaster occurs in cylindrical rolls, grayish white, softened by heat, insol. in water & nearly so in alcohol, taste none, smell peculiar but slight. Bubble when cold.
4. Used for adhesive and other plasters. Applied to burns &c.
1. Carbonate. Pots containing lead with some acetic acid are arranged in stacks with tanbark or tan — a subacetate is formed which soon becomes a carbonate from the carbonic acid evolved by the tan; this is levigated, and constitutes the white lead of painters — in ground with linseed oil — a powder, heavy white, tasteless — insoluble in water, soluble in caustic potash.
2. Seldom used. Dusting powder for excoriations of children but there is danger of absorption. Ointment for burns and excoriations, a cooling or desiccating application.

Acetate. Direct action of acetic acid on litharge — an
1 acetate of the protoxide — oblique prisms — slightly efflorescent & may attract carbonic acid (in solution a carbonate is readily formed which is insoluble) — sweet astringent, somewhat
a transparent whitish — soluble in water & alcohol. Common water contains carbonic acid, hence in a solution of the acetate of lead in such water carbonate of lead (insoluble) causes a milky appearance which is obviated or removed by adding a little acetic acid.

2. Prescription for diarrhœa attended by pale loose stools—℞ Rhubarb gr ½ Calomel gr ¼ Opii gr. ½ M. to be taken every hour or two. Highly recommended by Dr Irving of Charleston in the treatment of yellow fever in doses of 2 grains every three or four hours until 12 or 14 grains have been taken.

3. Lotion applied to inflamed parts or excoriating surfaces to diminish the [illegible] discharge & as a desiccant; e.g. in phlegmonous inflam., ophthal., ulcers with profuse discharges, gonorrhœa & glet— not in ulceration of the cornea, because it combines chemically with the tissue producing a white speck

Solution of the subacetate. Take acetate of Pb, li-
1. thunge and water; boil & filter. The acetate combines with an additional equivalent of oxide of lead to form a diacetate— it therefore consists of one atom of acetic acid and two of protoxide of lead. A transparent, colourless liquid, sweet & astringent.

2. Carbonate of lead is formed by exposure to the atmosphere.

3. To resolve inflammation, as in, phlegmonous or erysipelatous inflammation, whitlows, inflamed tendons, or absorbent glands, contusions, sprains, burns, wounds &c; and to check profuse discharges from blistered surfaces, ulcers, abscesses &c.

Cerate of the subacetate. Cerate of Saturn &c—
1. Melt wax with olive oil; then add camphor and incorporate with Goulards extract. Applied to burns scalds, blisters, ulcers &c to allay pains & irritation.
[Opium is sometimes advantageously combined.]

CLASS II.

TONICS.

General Observations.

Medicines which produce a gentle and permanent excitement of all the vital actions, though their influence is more observable in the functions of organic life, than in those of animal life.

Differ from astringents in the more general diffusion of their action, and in the want of any especial direction to the organic contractility.

The term "permanent" in relation to their action is not strictly correct. No medicine is permanently stimulant in the healthy state. All over-excitement ultimately produces a diminution of excitability; and, as every vital action is sustained by the influence of stimuli upon excitability, a diminution of healthy action results. Tonics operate slowly in exalting the functions, and their impression is more durable than that of the diffusible stimulants; but even the excitement produced by tonics, if given in the healthy state, is followed by a corresponding depression.

Tonics, therefore, are injurious if given in the healthy state, or in diseases of excitement. They may do harm in two ways, 1. by inducing an irritation which may result in inflammation; 2. by diminishing excitability or natural healthy power. These effects more fully explained. Diseases induced by the abuse of tonics. A good rule never to give these medicines in a state of sound health, with the view of increasing strength, or of rendering the system less accessible to disease.

Tonics indicated in cases in which the vital actions are depressed below the standard of health, in other words, in cases of debility. Here they produce increase of action, and if the excitability has not been materially impaired, place the system in a condition to recover and sustain itself. But even in debility, they should not be very long continued, as their ultimate effect might be an increase of the state they are given to remedy. A general rule, that tonics are applicable in debility without permanent loss of healthy excitability. Illustrations of this rule.

The mode by which tonics invigorate the system is two-fold—1. they increase the energy of the stomach and digestive organs when enfeebled, and thereby enable more nutriment to be thrown into the system; 2. they exercise a direct influence either by means of nervous communication, or through the medium of the blood-vessels, over the whole frame, producing an elevation of all the vital actions independently of any increase in the quantity of the blood.

Tonics differ in the degree of their stimulating property, and many of them also have individual peculiarities which serve to distinguish them prominently from the other members of the class. They may be divided into four sections; 1. the purer bitters; 2. bitters somewhat peculiar in their properties; 3. aromatics; and 4. mineral tonics.

1. *Pure bitters.* Bitterness possessed by all true vegetable tonics. At one time thought to be essentially the tonic power, and to reside in some peculiar principle. But the mineral tonics are not bitter, and the property belongs to many distinct vegetable principles. But still there seems to be some connexion between bitterness and the tonic property. Perhaps the same arrangement or shape of particles which produces the bitter taste when the medicine is applied to the tongue, is calculated to produce the tonic impression when it is applied to the stomach. Different substances may have this same arrangement or shape of particles, and in some it may be associated with other properties, which may enable them to operate with great energy on the system in a manner distinct from the tonic action, and calculated to conceal it. In this view of the subject every bitter substance may be tonic, though, from its possession of other more energetic properties, it may not display any tonic effect in its actual operation. This point further illustrated.

The pure bitters closely analogous in their effects, and used for the same purposes. Less stimulant than the others, and more purely tonic.

Effects on the system. They increase appetite—invigorate digestion—exert little influence over the circulation unless in large doses—offer little evidence of action on the nervous system—in large doses are apt to purge, and in very large doses sometimes vomit.

2. *Bitters peculiar in their properties.* Peculiar either by the inherent constitution of their bitter prineiple, as in Peruvian bark, or in consequence of its association with other

principles which modify its action, as in serpentaria, with a volatile oil, and in wild cherry bark, with hydrocyanic acid. In general, this division is more stimulating than the purer bitters, but not universally so.

3. *Aromatics.* Depend for their peculiarity on the presence of volatile oil. More stimulating than the bitters, they approach nearly to the diffusible stimulants, with which they might be associated without violence.

Pleasant to the taste and grateful to the stomach.

Employed to cover the taste of other medicines, to render them more acceptable to the stomach, or to increase their stimulant effect. Also used as anti-emetics and carminatives.

4. *Mineral tonics.* These have nothing in common but the tonic property, each having decided peculiarities which serve to distinguish it from the others.

1. *Pure Bitters.*

QUASSIA.

Wood of *Quassia excelsa* and *Quassia amara.*

1. Locality and general character of these trees.
2. Character of quassia as imported and as kept in the shops—weight—texture—colour—odour and taste—relations to water and alcohol—colour imparted to these menstrua.

Active ingredient, a peculiar principle called *quassin.*

3. Incompatibles.
4. Effects on the system, and medical applications.

Powder seldom used. Dose, 20 to 60 grains, 3 or 4 times a day.

Infusion most used. Proportions ʒij. to Oj. of cold water. Dose, fʒij. 3 or 4 times a day.

5. Extract, a powerful and excellent tonic. Has more tonic power in a small bulk than any other preparation of the pure bitters. Dose, 2 to 5 grains.

Tincture officinal. Dose, fʒj. to fʒij.

SIMARUBA.

1. Bark of the root of *Simaruba officinalis.*

Essentially the same in properties as Quassia.

GOLDTHREAD.—COPTIS. *U.S.*

Root of *Coptis trifolia.*

1. Locality of this plant—general character—appearance of the root.

Closely analogous in properties to Quassia.

GENTIAN.—GENTIANA. *U.S.*

Root of *Gentiana lutea*, and perhaps other species.

1. Locality and general character of this plant.
2. Shape, size, and general aspect of the root—colour externally and within—texture—colour of the powder—odour and taste—relations to water and alcohol.
3. Medical properties and uses.

Forms of administration numerous. Powder—dose, 10 to 40 grains. Infusion, made with half an ounce to a pint of water—dose, fʒj. to fʒij. Compound infusion officinal. Tincture—dose, fʒj. to fʒij. Remarks on the danger of giving tonic tinctures. Extract—dose, 5 to 20 or 30 grains.

4. Several plants belonging to the family of the Gentianeæ have properties analogous to those of gentian. Among these are the *lesser centaury* of Europe, *Erythræa Centaurium*, and the following.

AMERICAN CENTAURY.—SABBATIA. *U.S.*

Sabbatia angularis. Whole plant used.

1. General appearance—place of growth—season at which collected—sensible properties and relations to water and alcohol.
2. Medical properties and uses. Given in infusion, made with an ounce to a pint of water. Dose, fʒij.

COLUMBO.—COLOMBA. *U.S.*

Root of *Cocculus palmatus.*

1. General character of the plant, and place of growth.
2. Mode of preparing the root for market, and whence imported.

1. Pure Bitters.

Quassia.

1. A very tall tree, the wood, 100 feet high, leaves pinnate. The quassia wood, Surinam & Jamaica.
2. Imported in billets 3 or 4 feet long with the bark on – in the shops it occurs in small pieces & chips – little weight no odour – taste bitter – while becoming light yellow from exposure – intensely & simply bitter – it yields its virtues to water: produces straw colour.
3. Incompatibles none.
4. Increases appetite, promotes digestion, does affect the pulse, possesses no irritating or astringent properties. Useful in convalescence from febrile diseases and bowel affections as diarrh:, dysent:, cholera &c – In anæmia or from Chlorosis – sometimes scrofula – Perhaps most beneficial in dyspepsia with acidity, flatulence and nervous disorders – also atonic gout. Must be combined with the metallic tonics or with antacids.
5. The extract affords a good solvent for quinine, or chalybeates.

Simaruba.

1. A very tall tree – Guiana & Jamaica. Bark comes in long & broad strips, rough, fibrous, yellowish brown odourless, very bitter. Contains quassin.

Goldthreads.

1. From Greenland to Pennsylvania (North West parts) – root creeping & tenacious – leaves radical – grows in bogs – the roots as kept in the shops are thread like, bright golden yellow – brittle, extremely bitter, without odour, usually found mixed with the leaves.

Gentian.

1. Mountains of Europe, Alps, Apennines, Carpathian, – small herbaceous plant (pl. 31 sect. 1) flowers yellow.
2. Root spirally twisted, wrinkled & furrowed – 3 to 12 inches long, ½ to 2 inches thick – externally light brown, in-

terally dark yellow - texture spongy - powder light brown or brownish yellow - odour when fresh disagreeable - taste bitter & somewhat sweet - Contains sugar, hence the infusion ferments & is used in the Hypo as a spirituous drink - imparts its virtues to water

3. In all cases requiring the pure bitters. Contraindicated in febrile disorders and inflammatory conditions of the gastro-intestinal membrane. More disposed to bind the bowels than the other pure bitters. Sometimes causes vomiting.

4. Tinctures of the pure bitters are apt to stimulate too much from the alcohol they contain & thus prove injurious from the reaction & weaken the digestive and nervous system, so as to render the patient unable to dispense with their use. They prove useful in cases of debility requiring tonics and at the same time stimulants.

American Gentians.

1. One to two feet high - erect - branches axillary - flowers pink - Middle & Southern States, damp soils - collected in - a mild pure bitter substitute for gentian - imparts its virtues to water & alcohol.

2. A simple bitter tonic, resembling gentian.

Columbo.

1. A twining herbaceous plant - Mozambique but exported from Colombo in Ceylon.

2. The root is cut in slices & hung up in the sun to dry - imported from Colombo in Ceylon whence its name - or perhaps from "calum" the African name for the root.

3. Flat slices round or oval, one or two inches in diameter, and one fourth or one half inch thick, wrinkled & spongy - cortical portion hard, central portion thinner & shrunken - colour of the bark yellowish-gray, of the ligneous portion, greenish yellow - odour slightly aromatic - taste bitter and

aromatic- powder greenish yellow- yields its virtues to alcohol and water- not to be attacked by worms in its starch.

4. Like gentiana but rather milder. [A demulcent & aromatic tonic from its starch & stable oil. One of the most useful stomachic tonics, not apt like the more powerful tonics to excite nausea or headache. If Sanguid stomach with anorexia, flatulence, nausea & debility. In allays vomiting unconnected with inflammable of stomach, as in pregnancy and dentition. See Cetraria.]

5. Rx. Calomba ℥ss. Zingiberis ℥ss. Semin. ℥j or ij. Aquae bullientis Oj— Dose a wineglassful daily. useful in pain of stomach with flatulence and distension.

6. Unless made with cold water, then its demulcent property is not developed.

2. Modified Bitters.

Peruvian Bark.

1. The genus Cinchona of Linnaeus has been divided into several others; the Cinchona proper alone yields the bark- in all trees or shrubs growing 4 miles above the level of the sea in an equable climate.

2. The classification of the British College, by Mutis, founded on the botanical species viz. lancifolia, oblongifolia, and cordifolia, is erroneous, none of these varities yielding the best kinds of bark.

3. Pale bark occurs in quills, more flat- powder gray or fawn colour- taste astring., bitter. Contains cinchonia chiefly- is never used for procuring quina- altogether much weaker than the yellow bark.

4. The common yellow bark of the shops is not fit for medical use.

5. The officinal or Calisaya yellow bark- the quills are larger rougher & more ponderous than those of pale bark- powder bright cinnamon colour- bark firm in texture, covered with small spicula which stick to the fingers- may be

known by its greater bitterness & less astringency & by its precipitating sulphate of lime on the addition of sulph: soda to a strong ~~solution~~ infusion - furnishes almost exclusively all the quina ~~and~~ that is contains with cinchon.

6. Red bark comes in larger pieces - odourless - texture coarser and more fibrous - very bitter & astringent - contains both the cinchonia & quina - quite equal to the yellow bark in its effects.

7. Many varieties. Both yellow barks may be distinguished by their whitish epidermis readily being scraped off, their superior bitterness, and their not precipitating sulphate of lime on the addition of sulphate of soda.

8. Volatile oil, tannic, ~~kinic~~, and red cinchonic acids, gluten, starch &c.

9. Pale bark contains cinchonia chiefly, yellow quinia, and red both equally.

10. Quinia may be obtained by precipitation from the disulphate by ammonia - white, inodorous, peculiar bitter, fusible - on cooling after fusion yellow, translucent friable. In cold water nearly insoluble - boiling water dissolves $\frac{1}{200}$th part of its weight - soluble in alcohol & ether.

11. Crystalline (quinia is amorphous), colourless, inodorous bitter, infusible. Nearly insoluble in water - sparingly in alcohol & ether.

12. The native kinates of these salts are very soluble in water, but the native red cinchonates almost insoluble - tannates insol:.

13. [Cinchona is pre-eminent for its great tonic and febrifuge power. It is distinguished, besides, from the simple bitters by its astringency; from the pure astringents by its great bitterness; from the aromatic bitters by its astringency, by deficiency in volatile & consequently stimulating properties. Willow - and angustura bark, perhaps approach it more nearly than any other vegetable. Arsenic alone can be compared with it for febrifuge power.] Given in small doses at long intervals it produces the effect

3 . . . Shape, size, general aspect, and consistence of the pieces—difference between the cortical and central portion—colour—odour—taste—colour of the powder—relations to water and alcohol.

Active ingredient, a peculiar principle called *colombin*. Besides this, a large proportion of starch, according to Planche 33 per cent.—also mucilage, and a little volatile oil.

Nothing incompatible chemically, which is likely to be associated with it in prescription, unless, perhaps, iodine.

4 . . . Medical properties and uses.

5 . . . Frequently combined with other tonics, purgatives, aromatics, and antacids.

Used in powder, infusion, and tincture. Dose of the powder, 10 to 30 grains—of the infusion made in the proportion of ℥ss. to Oj., from f℥j. to f℥ij.—of the tincture, f℥j. to f℥ss. The infusion soon undergoes spontaneous change from the presence of starch.

6 . . . Numerous other bitters analogous to those mentioned; but at present little used, and not wanted.

2. *Bitters of peculiar or modified properties.*

These may be subdivided into 1. those having a peculiar alkaline principle, as Peruvian bark, 2. those in which the bitter principle is modified by combination with a sedative principle, as wild-cherry bark, and 3. those in which it is associated with a stimulant principle, usually a volatile oil, as serpentaria.

PERUVIAN BARK.—CINCHONA. *U.S.*

1 . . . Bark of different species of *Cinchona*—natives of the Andes—and extending from La Paz in Bolivia, to Santa Martha on the North Coast.

2 . . . Not certainly known from what particular species the different varieties of bark are derived.

Three officinal varieties; 1. *pale bark* (cinchona pallida), 2. *yellow bark* (cinchona flava), and 3. *red bark* (cinchona rubra).

All the varieties strictly officinal are brought from the Pacific Coast of South America. Those brought from the northern ports are considered inferior, and thrown together under the name of *Carthagena barks*.

1. *Pale bark.—Cinchona Pallida, U.S.*—Embraces the commercial varieties called Loxa and Lima barks. Named from the colour of the powder. Called *gray bark* by the French.

3 . . . Description of pale bark—colour of the powder—sensible properties.

2. *Yellow bark.—Cinchona Flava, U.S.*—This is the variety denominated in commerce *Callisaya bark*. Wholly different from the common yellow, which is a variety of Carthagena bark, and is not officinally recognised. Called by the French writers *royal yellow bark*.

4 . . . .

5 . . . Description of the yellow or Callisaya bark. Two varieties, the *quilled* and the *flat*—differences between them—colour of the powder—sensible properties of yellow bark.

3. *Red bark.—Cinchona Rubra, U.S.*—Quilled and flat—description—colour of the powder—sensible properties.

6 . . . .

Of these varieties the most efficient are the yellow and red—the least disagreeable, the pale.

Carthagena barks. Varieties—signs by which distinguished.

7 . . . Active ingredients of bark, two alkaline principles called *quinia* and *cinchonia*, combined with kinic acid.

8 . . . Other principles of bark.

9 . . . Difference in composition between the pale, yellow, and red barks.

10 . . . *Quinia.* Description of its properties—outline of the mode of preparing it—sulphate of quinia one of the officinal preparations of bark.

11 . . . *Cinchonia.* Differences between it and quinia.

12 . . . Both alkalies form salts of difficult solubility with tartaric, oxalic, and gallic acids.

Incompatibles. All substances which occasion precipitates with bark are not incompatible in prescription, as the substance precipitated is frequently not the active principle. The alkalies and alkaline earths and astringent infusions, may be considered as incompatible—the former precipitating the alkaline principles in a separate state, the latter forming with them insoluble compounds.

13 . . . Effects of bark on the system. At the same time that it is tonic, it exerts an influence peculiar to itself, and this influence is found to be incompatible with the existence of periodical or intermittent diseases. There are, therefore, two different and highly important properties of bark, therapeutically considered, viz. the anti-intermittent and tonic. Explanations on this point.

14 . . . Diseases to which bark is applicable as anti-intermittent, and speculations on its mode of action. Therapeutical applications as a tonic.

15 . . . Bark most powerful in substance. Disadvantages of this mode of administration. Only given in cases where a powerful anti-intermittent operation is required. Power increased by combination with opium and aromatics. Dose, ℥j. repeated so frequently that from ℥j. to ℥ij. may be taken between the paroxysms. Best mode of administering bark in sub-

16 . . . .

In rheumatism with perspiring & night. I am in the habit of giving bark & twithstanding presence of pulse. — In passive hemorrhages various nervous diseases, hysteria, chorea, hemicrania, resulting from debility — In the last or suppurative stage of inflammation, gangrene, anthrax, some forms of erysipelas.

15. In substance apt to nauseate & irritate the stomach — useful sometimes when quinia fails

16. The whole quantity to be taken in a certain time should be mixed with water, in a bottle, and allowed to remain; thus the bark will mix more readily & will be more easily swallowed.

17. Do, not contain the whole of the alkaloids, improved by sulph. acid.

18. Boil Calisaya bark (coarsely powdered) in water acidulated with sulph: or muriatic acid; — sulph: or muriate of quinia is held in solution. Add lime — sulph: & muriate of lime is formed & quinia is precipitated mixed with lime &c. Dissolve in alcohol to separate the quinia, the lime remaining undissolved. Distil off the alcohol & saturate the remaining quinia with dilute sulph. acid, then set aside to crystallize — Small, silvious, flexible crystals. — there are two sulphates a di-sulph: (Sulph: acid 10g + quinia 28g:) & a neutral sulphate, the former is officinal — efflorescent on exposure — pearl coloured very bitter — sparingly soluble in water soluble in alcohol & dilute acids

19. Does not possess all the properties of bark — no tannin. less apt to nauseate or purge. Some cases of intermittents are curable by bark and not by quinia. Differs from the smallness of dose & being less apt to nauseate — as a tonic to the digestive apparatus less irritating than the bark, but not as efficacious as simple bitters. When given in small doses it is more likely to agree with the stomach & to be absorbed.

20. For endermic application to a blistered surface, dilute the quinia & use twice the dose by the mouth.

21. Pill. made with syrup or gum, or with extract of gentian. Solution one grain of the sulph: quinia to 2 drops of sulph: acid in water ad lib: — The sulphate of quinia is often combined with oil of pepper, or piperine, blue mass calomel &c.

22 Adulterated with sulphate lime, or some other white mineral — detected by evaporating. Substances insoluble in water may be detected by solution in water acidulated with sulph: acid. American is preferable because less apt to be adulterated.

23. Two sulphates of cinchonia & of quinia — disulphate used in medicine. Crystals smaller, less bitter. Used as Quinia.

Dogwood Bark.

1. A small tree — flowers small, involucre large, white, obcordate — leaves become decayed in the Autumn. Canada to Florida.

2. Bark slightly quilled — fawn coloured externally, reddish internally — odour slightly aromatic — taste bitter astringent — yields its virtues to water and alcohol.

3. Dose of powder ℈j to ℈j — Decoction Water ℔j — bark ℈j — dose f℥j to iij An extract may be made by dilute muriatic acid.

Wild-cherry Bark.

1. Prunus Cerasus serotina — large tree (25 to 80 feet) flowers small white — fruit purplish black — wood hard, used for furniture. Fruit sweet slightly bitter, used to flavour brandy (cherry bounce), which is used in domestic practice for dyspepsia.

2 Bark reddish brown — fibres of epidermis transverse — odour prussic when fresh or macerated — agreeable bitter astringent — yields its virtues to water (best cold) & alcohol — infusion and tincture deepened like Madeira wine — the development of the active principle hydrocyanic acid depends on the action of emulsin by catalysis on amygdalin & water; heat (212°) coagulates emulsin & prevents its action.

3 The genera Amygdalus, Prunus, & Cerasus contain hydrocyanic acid.

4. Consumption where the indication is to support the system without stimulating the circulation. It lessens the tension frequency, & irritated state of the pulse; moderates the cough and

fuse night-sweats, checks the diarrhœa and sustains the general strength of the system. Ebule I. Intermittents — Convalescence from acute disease with anorexia and tendency to prostration.

5 Infusum Pruni Virginianae (U.S.) ℞. Wild-cherry bark bruised ℥ss; Water a pint. Macerate for 24 hours & strain. Cold water should be used. Deep clear wine-colour — odour & taste hydrocyanic, aromatic & bitter.

Chamomile.

1. Stem procumbent with perpendicular flower stalks — flowers compound — native of Europe, gravelly soils.
2. Flowers of disk yellow of rays white — single flowers have the largest yellow disks in which the volatile oil resides and are therefore preferable. Odour fragrant — taste warm, bitter, aromatic — yields properties to water & alcohol.
3. water & alcohol Possesses the properties of the pure bitters but is more disposed to excite the circulation. A mild tonic in convalescence from acute diseases — in large doses apt to nauseate, whence employed to assist other emetics or to produce vomiting when a tendency to it already exists.
4. From the loss of the volatile oil driven off by heat. Anthemis cotula possesses some of the same powers, but is less agreeable from its strong offensive odour.

Thoroughwort.

1. Three stems from each root continuing to branch at every leaf into three — leaves connate, perfoliate decussating at right angles — flowers white in dense corymbs.
2. Should be collected while flowering in Aug. & Sept. — pressed by the Shakers into cakes — odour agreeable, taste bitter, yields its virtues to water & alcohol.
3. Bitter tonic — has an influence on several secretions — tonic diaphoretic, diuretic & emetic — has been used in inter-

mittents but not with much success- should be given just before the expected paroxysm- in catarrhal fever, influenza &c- in the remissions of remittent fevers where the use of bark is doubtful.

Virginia Snake-root.

1. Also A. hastata & A. hirsutar, also A. reticulata
2. Stem long and flexuose- leaves cordate- flowers lying on the ground- Middle, Southern, & Western States- brought in bales to Pittsburg & Wheeling, also from the Red river- the Red river variety is the A. reticulata
3. A twisted head with many fibres- slender, brown,- odour aromatic- taste aromatic, bitter, camphorous- Red river kind has larger fibres- yield their properties to water and alcohol.
4. Mixed with Spigelia, which is detected by its coarser radicles.
5. Tonic & stimulating- acts on the secretions, diaphoretic, purgative, emetic. Used in combination with bark especially where more stimulation is desirable- very useful in typhus & typhoid fevers- also in intermittents
6. Decoction objectionable because vol: oil is driven off.
7. Wormwood- stimulating tonic- once used in intermit: Tansy- The oil supposed by some to be anthelmintic & emmenagogue & to produce abortion.
   Horehound- supposed to possess peculiar virtues in catarrhal affections, but this is doubtful.

Myrrh.

1. Small tree of stunted growth in the deserts of Arabia
2. Turkey myrrh is best- India is darker coloured.
3. Pieces irregular- consisting of agglomerated tears- translucent- yellowish red, or reddish-brown- powder yellow- fracture splintery & fatty- odour aromatic- bitter, warm,

aromatic – a gum resin containing a vol: oil – yields its properties imperfectly to either alcohol, water, or ether, the water taking up the gum principally, the ether the resin & vol: oil – alkalis promote its solubility – by distillation the vol: oil is obtained – It is often adulterated but only when in powder.

4. Stim: tonic, supposed to have a direction to the uterus & lungs – its stimulating prop: render it improper in inflam: of stomach Used in chronic pectoral diseases connected with debility & amenorrhœa – commonly combined with squill &c and as an emmenagogue with carbonate of iron.
5. Water combines with the alcohol and precipitates the resin in which resides the active principle.

Angustura Bark.

1. Brought directly from South America or via the W. Indies – pieces thin, cut obliquely from the tree several inches long – epidermis grayish white micaceous, bark brownish – taste bitter, pungent – odour strong peculiar – yields to wa: & al:. False angustura is the bark of the Strychnos nux-vomica.
2. Stimulating tonic – intermittents & remittents especially the low forms in tropical climates – in South America used in bilious diarrhœa & fevers especially bilious remittents – not much used elsewhere at present.

Cascarilla.

1. From Nassau (Bahamas) – quills perfect or particl 2 or 3 inches long – epidermis whitish cracked, bark brown – odour aromatic – taste bitter, warm, aromatic – when burnt emits an odour resembling that of musk – yields its virtues to water & alcohol.
2. Pleasant aromatic tonic in dyspepsia. In Germany a favourite in low nervous fevers, latter stages of dysentery &c –

3. Aromatics

1. Odour strong – taste pungent – partially vaporized at common temperat: rapidly at temp: much above 212° – their vapour rises in the steam of boiling water – highly combustible – sparingly soluble in water, readily in alcohol, ether, & fixed oils –

Medical properties and uses.

As a tonic, used in powder or cold infusion. Dose of the powder, 20 or 30 grains, of the infusion, f℥ij. repeated 2, 3, or 4 times daily.

As a diaphoretic, used in the state of warm infusion. Dose, f℥ij. every 2 or 3 hours.

As emetic, a small bowlful of the infusion may be taken warm.

VIRGINIA SNAKEROOT.—SERPENTARIA. *U.S.*

Root of *Aristolochia Serpentaria*, and perhaps other species of Aristolochia.

The plant indigenous, herbaceous, perennial. General character—place of growth—place where the root is collected.

Character of the root—colour—colour of the powder—odour—taste—relations to water and alcohol.

Active ingredients, a bitter principle and volatile oil.

Adulterations.

Effects on the system—medical uses.

Used in powder and infusion. Dose of the former, 10 to 30 grains, of the latter, f℥j. to f℥ij. every 2 or 3 hours. Tincture officinal, dose, f℥j. to f℥ij. Decoction objectionable.

Bitters resembling Virginia snakeroot in combining a bitter principle with volatile oil, and possessing stimulant properties, are *wormwood* (Absinthium, *U.S.*), *tansy* (Tanacetum, *U.S.*), and *horehound* (Marrubium, *U.S.*). Remarks on each of these. None of them much used.

MYRRH.—MYRRHA. *U.S.*

Exudation from *Amyris Myrrha—Balsamodendron Myrrha* of some writers.

Character of the plant, and place of its growth.

Two varieties of myrrh, India and Turkey, the former from the East Indies, the latter from the Levant, both probably originally from the same source. Difference between these varieties.

Properties of myrrh—size and shape of the pieces—translucency—colour—colour of the powder—fracture—odour—taste—chemical nature—relations to water and alcohol—influence of alkalies on its solubility—result of distillation.

Active principles, resin and volatile oil.

Effects on the system, and therapeutical application.

Used in powder, pill, emulsion, and tincture. Dose in substance, 10 to 30 grains—of the tincture f℥ss. to f℥j. The tincture seldom used internally. Reason why the tinctures of myrrh and other gum-resins are better made with alcohol than with diluted alcohol.

ANGUSTURA BARK.—ANGUSTURA. *U.S.*

Bark of *Gallipea officinalis*, a small tree growing in South America.

Whence brought—shape and size of the pieces—colour—colour of the powder—smell—taste—relations to water and alcohol.

Active constituents, bitter extractive and volatile oil.

Effects on the system, and therapeutical application.

Used in powder, infusion, and tincture. Dose of the powder 10 to 30 grains, of the infusion f℥ij., of the tincture f℥j. to f℥ij.

False Angustura bark described, and its poisonous properties alluded to. Its active ingredient, an alkaline principle called *brucia*.

CASCARILLA. *U.S.*

Bark of *Croton Eleutheria*, and possibly of *C. Cascarilla*—shrubs growing in the West Indies.

Whence imported. Two varieties. General characters, as size, shape, colour, &c.—smell—odour when burnt—taste—relations to water and alcohol.

Active ingredients, extractive and volatile oil.

Medical properties and uses.

Used in powder and infusion. Dose of the former 20 to 30 grains, of the latter f℥ij.

3. *Aromatics.*

Substances having a fragrant odour, and a pleasant spicy taste, with little admixture of disagreeable flavour. Owe their distinguishing properties to volatile oils.

Volatile, essential, or distilled oils.—Odour—taste—volatility—point of ebullition—how affected by boiling water—inflammability—solubility in water, alcohol, ether, and fixed oils—composition—effects of exposure—adulterations and modes of detection—mode of preparation.

quills - darker colour - texture coarser, - fracture shorter - thicker - not so fragrant & pleasant to the taste

4. Oil of cinnamon is golden yellow becoming dark red by age - very warm pungent - aromatic.

5. In diarrhea combined with veg: astring: as logwood, catechu &c - or chalk, & opium.

6. ℞. Ol. cinnam: fʒss. Magnesia carb: ʒss. aquae distill O.ij. triturate the oil with the carbonate & then add the water filter. Carb: magnes: & sugar have the property of diffusing some vol: oils through water & rendering them miscible - Cinnam: water a good vehicle.

Canella.

1. Tall evergreen - quills or broken pieces - fracture short - orange externally light yellow within - colour of powder light orange - aromatic clove-like odour - taste aromatic, very pungent, acrid - yields its virtues to water & alcohol.

2. Debility of digestive organs. Little used except as an adjuvant to Aloes in Pulv: Aloës cum Canellâ or hiera picra,

3. South America - Peru, Chili. Large forest tree.

Cloves.

1. Small tree 15 to 20 feet - originally from the Moluccas, now cultivated in many of the Eastern Islands, & in Cayenne whence our supplies. [the Cayenne inferior - E. India best. Varieties]

2. Shaped like a pin or nail (clou Fr. nail) - ¾ inch long - dark brown - odour strong & fragrant - taste hot acrid - yields its virtues to water & alcohol.

3. From its weight the vol: oil does not rise with water at the ordinary boiling point; salt is added to raise the boiling point of the water - at first colourless becoming dark red - hot, acrid taste &c - Specific gravity greater than that of water. Applied on cotton to carious teeth.

Nutmeg.

1. A tree 20 feet high, like a pear tree - Moluccas - fruit size of a peach, consists of a pericarp, an arillus (mace)

and a nucleus (nutmeg). The arillus is fleshy & scarlet when recent when dry it becomes yellow & brittle constituting mace, which is prepared by stripping off the arillus & drying in the sun. The nucleus freed in the sun & then in lime & dipped in lime water as a protection from insects becomes a nutmeg.

2. Shape elliptical - ¾ inch long - colour brown & whitish - surface furrowed by the mace - when broken reddish gray with red veins - powdered by rasping or grating.
3. By distillation with salt & water - colourless or pale yellow, acid - heavier than water.
4. By expression from nutmegs assisted by heat - orange colour, solid & firm consistence - rarely used in chronic rheumatism & palsy.
5. Membranaceous, flat, slit irregularly - pale yellow - odour & taste like nutmegs - uses as those of nutmeg.
6. An excellent adjuvant to alum preventing nausea. [In mild diarrhea substitute for opium - Pereira.]

Black Pepper.

1. A vine climbing on trees - flowers a spadix & spathe - berries on the spadix, first green, then red, then black - Malabar, Sumatra, Java & the West Indies - berries gathered when red.
2. Piperin depends for its efficacy on vol. oil mixed with it.
3. The most stimulating of the aromatics - weak digestion, flatulence - an adjuvant to purgatives.

Cubebs.

1. Resemble black pepper in shape & size but have a persistent stalk 2 or 3 lines long - brown surface with reticulated projections - internally is a hard whitish seed - its powder resembles that of opium - odour peculiar aromatic - taste warm, pungent, camphoraceous -
2. Usually greenish, when fine colourless -
3. Injured by loss of their volatile oil the active principle.
4. In large doses produce heat - ache and giddiness - increase

the quantity of urine, deepen its colour, & impart to it an aromatic odour — stimulate the bladder - gonorrhea, gleet & leucorrhea - often combined with copaiba, nitre &c - Ricords prescription for gonorrhea (Vid: Gibsons Surgery Vol 1. p. 207)

Pimento.

1. Somewhat larger than black pepper, round, brown, rugh, taste warm pungent, odour agreeable - Resemble from an idea that its smell resembled that of several spices.
2. Like oil of cloves. Pimento is not much used - like other aroms.

Cardamom.

Plant resembles Indian corn but is smaller.

1. A triangular capsule, striated, ½ inch long - dirty yellow. seeds angular, rugose, dark brown, contain more virtue than the shell - odour fragrant, taste warm, pungent agreeable - yield virtues to water & al.
2. Combined with purgatives to obviate griping, with tonics &c.
3. A good addition to alkaline draughts in dyspepsia.

Fennel-seed.

1. Seeds flat on one side convex on the other, 2 to 4 lines long - with five ridges - blackish brown - odour agreeable taste pleasant.
2. By distilling with water - pale yellow at first colourless - limpid
3. Fennel-seed are an excellent addition to vegetable infusions especially senna - have the advantage of being less stimulating than cardamom, cloves &c.

Caraway - Southern Europe - oil reddish - uses, doses &c like fennel.
Coriander - South of Europe - seed globular nibbed - oil yellow.
Anise - Southern Europe - flatulent colicks of children.

Lavender.

1. Lavender, Rosemary, Cinnamon, Nutmeg Cloves in Alcohol. Stimulant cordial - flatulence, faintness, low spirits &c.

Rosemary.

1. Leaves linear with a white streak on the under surface, edges revolute - more stimulant than aromatic.
2. An ingredient of the camphorated ammoniacal lotion.

BLACK PEPPER.—PIPER. *U.S.*

Dried berries of *Piper nigrum.*

1. General character of this plant and place of growth. The berries deprived of their outer covering, constitute *white pepper.*

Constituents of black pepper, volatile oil, an acrid concrete oil, and a white crystalline principle called *piperin*, formerly thought to be the active principle, but now known to be inert when pure.

2. Therapeutical uses of black pepper.

CUBEBS.—CUBEBA. *U.S.*

Dried fruit of *Piper Cubeba*, growing in the East Indies.

1. Shape and size of Cubebs—colour and character of the surface—internal structure—odour—taste.
2. Active ingredient, a volatile oil, obtained by distillation. Sensible properties of the oil—consistence.
3. Effects of time and exposure on cubebs. The powder an improper form for keeping.
4. Medical properties, those of an aromatic and diuretic—effect on the urine—therapeutical applications.

Dose of the powder, ʒss. to ʒiss. 3 or 4 times a day—of the volatile oil, 10 to 20 drops.

PIMENTO.—PIMENTA. *U.S.*

Berries of *Myrtus Pimenta*—a handsome tree growing in the West Indies, particularly in Jamaica, and hence called *Jamaica pepper.*

1. Size, shape, and sensible properties. Origin of the name of *allspice.*
2. Active properties supposed to reside in a volatile and fixed oil. Colour of the volatile oil.

Dose of the oil, 3 to 6 drops.

CARDAMOM.—CARDAMOMUM. *U.S.*

Fruit of *Alpinia Cardamomum*—a plant growing in Malabar.

1. Shape and size of the fruit—colour—relative virtues of the capsule and seeds—the former rejected in powdering—odour—taste—relations to water and alcohol. The virtues of the medicine reside in a volatile oil. It should be kept in capsules, not powdered.
2. Much used as an addition to other medicines, particularly infusions, in the proportion of one or two drachms to the pint. Enters into numerous officinal preparations.
3. Compound tincture of cardamom, one of the most agreeable aromatic preparations. Dose, fʒj.

FENNEL-SEED.—FŒNICULUM. *U.S.*

Seeds of *Anethum Fœniculum*—a perennial herb—native of Europe—cultivated in this country. The whole plant possessed of aromatic properties.

1. Shape and size of the seeds—colour—relations to water and alcohol.
2. Volatile oil—*Oleum Fœniculi*—mode in which obtained—colour—specific gravity.
3. Infusion prepared in the proportion of 2 drachms to a pint.—Dose of the oil, from 5 to 15 drops.

Other Aromatic Seeds, less used.

CARAWAY—CARUM, *U.S.*, from *Carum Carui;*
CORIANDER—CORIANDRUM, *U.S.*, from *Coriandrum sativum;* and
ANISE—ANISUM, *U.S.*, from *Pimpinella Anisum.*

These are used in the same way, and for the same purposes, as the preceding. The oil of caraway is occasionally used in a dose varying from 1 to 10 drops.

An aromatic fruit called *star aniseed*, derived from *Illicium anisatum* of China, is often substituted for the true aniseed.

LAVENDER.—LAVANDULA. *U.S.*

Flowering spikes of *Lavandula vera*—a native of the South of Europe, but cultivated in our gardens.

Their virtues reside in a volatile oil, which is separated by distillation, and used as a perfume. Dissolved in alcohol, it forms *spirit of lavender.* Uses.

1. *Compound spirit of lavender*—preparation—uses.—Dose, fʒss. to fʒj.

ROSEMARY.—ROSMARINUS. *U.S.*

1. Tops of *Rosmarinus officinalis*—a shrub growing on the shores of the Mediterranean. Their virtues reside in a volatile oil, which is separated by distillation, and is colourless: The spirit of rosemary and the volatile oil are officinal.—Chiefly used as external remedies.

applied externally [Mix powdered ginger & boiling water, and spread on paper or cloth.]

5. Syrups may be made by mixing the extractive tincture with syrup & then evaporating the alcohol. A convenient adjunct to acid drinks. Magnesia is usually taken in it.

Calamus.

1. Rhizome (root stalks) jointed & chongy – in the shops flattened pieces 4 or 5 inches long – colour yellowish brown, odour aromatic taste warm & bitter.

4. Mineral Tonics.

Iron.

1. The most useful of the mineral tonics and in some cases of anæmia & debility almost a specific.
2. Iron exists in the hæmatozin of the blood, in combination it is supposed with some animal principle. Liebig supposes that it is a carbonate of the protoxide in the blood which in the lungs gives up its carbonic acid & receives oxygen thus becoming a peroxide, which parts with its oxygen to the system & takes carbonic acid again becoming the carbonate to pursue the same course: thus iron is the vehicle by which oxygen is conveyed to the system & carbon from it.
3. Now ascertained with certainty to produce its curative effects by combining with the blood.
4. The system of animals to which much iron has been given is said to be much contracted.
5. One of the most efficient emmenagogues, acting either by improving nutrition generally or through the nervous system. [When iron proves useful as an emmenagogue, the want of uterine action is an effect & not a cause of anæmia; this is rendered tolerably certain by the fact that anæmia sometimes occurs without uterine derangement, & even in males. Ed.] [At one time we observe this metal promoting the uterine discharges, at another checking it according as chlorosis or menorrhagia had been previously present.]

6. In dyspepsia, combined with bitter extracts, aromatics and laxatives, as carb: iron with quassia or gentian, ginger & rhubarb. In menorrhagia & the passive hemorrhages generally. In chlorosis it is almost a specific, combined with myrrh or aloes. In phthisis. in chronic hepatic diseases combined with a laxative. In anæmia. indicated by pale lips and tongue with debility no matter how frequent the pulse. [Contraindicated in irrit: or inflam: of alim: canal. in plethoric habits, & in persons disposed to inflammatory diseases or to apoplexy. Pereira.] Recommended by Carmichael in cancer. Said by Cruveilhier to be a specific in chronic enlargement of spleen.

7. Almost any preparation of iron may be employed in cases in which one has been found useful. The stools are blackened by the use of iron, & may therefore mislead by seeming to indicate that an alterative course of mercury is demanded.

8. Sometimes purified by a magnet. reduced to an impalpable powder by passing hydrogen over the red-hot oxide.

9. By hammering from heated iron, collected at blacksmiths' anvils. a mixture of protoxide & sesquioxide. purified by washing and the magnet.

10. By exposing iron minutely divided to the action of air & moisture, then pulverizing & washing. sesquioxide. reddish chocolate brown. little taste. insoluble in water.

11. By adding a solution of carb: soda to a solution of sulphate of iron, & washing & drying the precipitate. by an exchange of acids & bases sulph: soda & carb: iron are formed the latter by attracting oxygen is converted into sesquioxide which it contains in greater or less quantity in proportion to its age. A powder reddish becoming black by age. taste & smell none. It owes its virtues to the protoxide of iron mixed with it.

12. Pil. ferri carb:. Precipitated from a solution of sulph: iron by carb: soda, and incorporated without contact of air with sugar or honey. a carbonate of the protoxide. saccharine matter prevents the further oxidation of the protoxide. One of the most valuable chalybeates

on account of its being easily soluble in the fluids of the stomach. Dose 5 to 10 grains.

13 Sulphate of iron - direct action of sulphuric acid on iron wire, the solution is filtered & the salt crystallized - sulphate of the protoxide of iron - green - taste metallic, styptic, acid - effloresces & becomes a white powder turning by age to a reddish hue (the protoxide of iron & its salts attract oxygen & become the sesquioxide of a brownish hue) - the solution on exposure deposits a brown precipitate the sesquioxide - heat first expels the water of crystallization & forms a white powder & then decomposes the salt - the dried sulphate is a white powder. Iron filings will prevent the precipitation of the sesquioxide from the solution. Incompatibles are alkalies, alkaline earths & their carbonates, all salts whose bases form insoluble salts with sulphuric acid, acetate & subacetate of lead, vegetable astringent infusions for the most part - some of the above not incompatible medicinally, thus it may be & is frequently given in combination with an alkaline carbonate when the peroxide is produced; the mixture should be shaken before using.

14 More astringent & more irritating than the other preparations of iron - externally to ulcers, ophthalmia, leucorrhœa & gleet - tonic in intermittents - & minim with bitter extractive purgatives as rhubarb & aloes - in over dose produces inflammation of stomach - dried sulphate used for pills to avoid efflorescence. Mist. ferri comp: is much used in consumption connected with amenorrhea.

Tinct: of the Chloride. By treating sesquioxide of iron with muriatic acid in excess - a tincture of the sesquichloride of iron - liquid, reddish brown, odour of muriatic acid - taste sour, astringent, chalybeate - incompatible same as sulphate - may be used like the other chalybeates - supposed to act on the urinary passages, hence useful in spasm of urethra [Vid: Cecilia.]

15 Tartrate of Iron & Potassa. By saturating the excess of ac-

id in bitartrate of potassa by boiling with sesquioxide of iron - the sesquioxide should be prepared from the sesquichloride - a double salt; tart: acid 29g + sesquioxide iron 18g + potassa 12g. - a powder, olive green - astringent, acid, [inky]. Very soluble in water - deliquescent - a very mild chalybeate to be preferred when a solution is desired.

Tartrate of iron & ammonia. - [shining brittle fragments of a deepred colour - taste very saccharine - very soluble in water.] It has little to recommend over the above although lauded by the Journals. [Its advantages are ready solubility, agreeable taste & the facility with which it may be joined with various saline substances without undergoing decomposition.]

17. Phosphate of Iron. By the mutual decomposition of sulph: iron & phosph: soda - Phosphoric acid 12g + protoxide of iron 12g: - insoluble in water, little tasteless recommended in cancerous affections by Carmichael, in which it may be useful from its tonic power as may other preps: of iron.

18. Iodide of Iron. By direct combination of iodine and iron - solid disadvantageous from its great deliquescence - the protiodide is changed by exposure to the sesquioxide this is prevented by introducing clean iron wire & more effectually by adding a solution of honey or sugar - scrofulous affections because it combines tonic with alkaline properties

19. Ferrocyanuret of Iron. Parussian blue - in masses rich dark blue, tasteless, odourless - insoluble in water or alcohol - Intermittents (Zollikoffer) - epilepsy &c little used - dose 4 to 6 or more grains every four hours.

Lactate of Iron. By macerating iron filings in lactic acid - green, acicular crystals - supposed to be more efficacious on account of the lactic acid of the

stomach having been thought to convert the other preparations of iron into the lactate before they could be absorbed – this opinion unfounded – it does not appear to possess any advantage over the other chalybeats.

Citrate of Iron. By macerating iron filings in citric acid – slightly soluble in cold, more so in boiling water.

Copper.

1. The poisonous effects of metallic copper may be prevented if this be true by an alkali or antacid.
2. Danger only when acid or acetic is allowed to be formed – Mineral water fountains, if the lining of tin be not perfect are apt to form carbonate of copper which is mixed with the beverage.
3. Sulphate of Copper. By roasting sulphuret of copper the sulphur attracts oxygen & becomes sulphuric acid, the copper also attracts oxygen & becomes protoxide of copper. These combining form sulphate of copper which is then freed from impurities by lixiviation & the process of crystallization – crystals are doubly oblique prisms & contain 5 atoms of water – colour blue – taste metallic astringent & disagreeable – effloresce very slowly – consist of sulphuric acid 1 eq: + protox: of copper 1 eq: + water of cryst: 5 eq: – very sol: in water: insol: in alc: – solution blue – at heat lose their water of cryst: & become a white powder by very intense heat are decomposed – incompat: are alkal: & alk: earths & their carbonates, – ammonia precipitates copper & then redissolves it producing a beautiful blue colour; this is a test.
4. In small doses excites the appetite & acts as a tonic – in larger doses it is emetic – in very large, or exorbitant doses it is a corrosive poison [symptoms are coppery taste enunciations, vomiting & purgings, gripings, cramps in leg: & thighs, head-ache, convulsions, insensibility] – on dissection inflam: of stomach & sometime of brain – treated

Used in dyspepsia without inflammation, and in all complaints consequent upon or sustained by debility of stomach. Also in chronic diseases of general debility, and particularly when associated with disorders of menstruation. In amenorrhœa when not attended with excitement. In deficient sanguification. In various nervous affections, as neuralgia and epilepsy.

Acts probably through the medium of the circulation.

Numerous preparations—unnecessarily multiplied.

Uncombined iron not destitute of activity. Possibly oxidized in the stomach. Used in the form of *filings—ramenta ferri*. Mode of purifying. Dose, 5 to 20 grains.

Scales of iron—squamæ ferri. Mode of preparing—chemical nature—mode of purifying —colour of the powder—mode of preparing the powder—dose, 5 to 20 grains.

Rust of iron. Rubigo ferri. Mode of preparing—chemical nature—colour—taste—insolubility in water. Uses and dose the same as those of the following.

Subcarbonate of Iron.—Ferri Subcarbonas, U.S. Formerly called *Precipitated carbonate of iron*. Mode of preparing—chemical changes and nature. Form—colour—taste—smell —insolubility in water—partial solubility in water with carbonic acid. One of the best chalybeates. Mild and effectual. Dose, 5 to 20 grains, in pill or powder—in neuralgic cases from ʒss to ʒj. 3 times a day and gradually increased.

Protocarbonate of Iron.—Vallet's Ferruginous Pills.—Pilulæ Ferri Carbonatis, U.S. Mode of preparing—chemical composition—influence of saccharine matter in their preservation. Advantages over other chalybeates. Dose.

Sulphate of Iron.—Ferri Sulphas, U.S.—Green vitriol—in commerce *copperas*. Mode of preparing—chemical nature—colour of crystals—taste—effects of exposure—solubility in water—insolubility in alcohol—effects of exposure on the solution—effects of heat—colour and form of the dried sulphate. Incompatibles. Medical uses. Unsafe in large doses—effects of over doses. Dose of the crystallized, from 1 to 5 grains—of the dried, from ½ grain to 3 grains, 3 or 4 times a day. If given in pills, the dried preferred—reason of this. *Compound mixture of iron* (*Mistura Ferri Composita, U.S.*). Uses.

Tincture of Chloride of Iron.—Tinctura Ferri Chloridi, U.S. Mode of preparing—chemical nature—form—colour—odour—taste—incompatibles—medical uses. Dose, 10 to 30 minims, 3 or 4 times a day.

Tartrate of Iron and Potassa.—Ferri et Potassæ Tartras, U.S. Mode of preparing—chemical nature—form—colour—taste. Solubility in water—effects of exposure. A mild chalybeate. Dose, 10 to 30 grains. *Tartrate of Iron and Ammonia* has been used.

Phosphate of Iron.—Ferri Phosphas, U.S. Mode of preparing—chemical nature—form —colour—insolubility in water—medical uses. Dose, 5 to 10 grains.

Iodide of Iron.—Ferri Iodidum. Mode of preparing. Used in a solid form and in solution. Latter usually preferred. Officinal under the name of *Liquor Ferri Iodidi, U.S.* Effects of exposure on solution, and mode of obviating. Particular application. Dose, in substance, 2 to 5 grains. Dose of solution, 15 to 40 drops.

Besides these chalybeates, the *Ferrocyanuret of iron, Acetate of iron, Ammoniated iron, Tartrate of iron, Lactate of iron*, and *Citrate of iron*, are sometimes used.

COPPER.—CUPRUM. *U.S.*

In small quantities, the preparations of copper have little sensible effect on the system. It may be inferred, from their effects in disease, that they exercise a general tonic influence, which is extended especially to the nervous system. In larger quantities they act as poisons. It is probable that, in this case, their action is local, consisting, according to the amount taken, of irritation, inflammation, or disorganization of the part acted on. It is doubtful whether they can be introduced into the system by way of absorption in quantities large enough to prove greatly detrimental, without producing at the same time dangerous or fatal local disorganization. Hence, in the administration of copper, it is necessary to guard chiefly against inflammation of the stomach and bowels.

It is not certainly determined whether copper, in the metallic state, has any influence on the system. Cases are recorded in which little or no injury has resulted—others in which it has proved detrimental. It is probable that, in the latter cases, it was oxidized, or formed saline combinations in the stomach.

Poisonous effects from copper vessels in cookery—from mineral-water fountains.

The following preparations are officinal in this country:—

Sulphate of copper.—Cupri Sulphas, U.S.—Blue vitriol. Mode of preparation—character of the crystals—colour—effects of exposure—chemical nature—solubility in water—insolubility in alcohol—colour of the solution—taste—effects of heat—incompatibles.

Effects in moderate doses on the system—on the stomach—poisonous effects—appearance on dissection—treatment—antidote—therapeutical application, both internally and externally.

Dose, one quarter of a grain, 2, 3, or 4 times a day, gradually increased, and omitted or reduced when irritation of stomach is occasioned. Given in pill.

Ammoniated Copper.—Cuprum Ammoniatum, U.S. Mode of preparation—phenomena and rationale of the process—chemical nature—colour—odour—taste—solubility in water—incompatibles.

Therapeutical applications. Dose, half a grain twice a day, gradually increased.

ZINC.—ZINCUM. *U.S.*

The preparations of zinc are mild tonics, thought to have an especial direction to the nervous system. They are similar to the preparations of copper, but much less energetic.

Zinc in the metallic state is inactive.

Sulphate of Zinc.—Zinci Sulphas, U.S.—White vitriol. Mode of preparing—chemical composition—shape and colour of the crystals—taste—solubility in water and alcohol—effects of exposure—effects of heat—incompatibles.

Effects on the system and on the stomach—effects of over doses. Therapeutical applications, internal and external. Dose as a tonic, from half a grain to 2 grains, in pill or solution. As a local application, used in solutions, containing, when applied to mucous surfaces, from 1 to 2 grains to the fluidounce—when to cutaneous eruptions, from 5 to 10 grains—when to ulcers, in order to change the action of their surface, from 10 to 20 grains.

With acetate of lead as an external application—proportions, 2 grains of sulphate and 3 grains of acetate to f℥j. of water—chemical changes. *Acetate of zinc* sometimes used in the pure state—1 or 2 grains to f℥j. of water.

Oxide of Zinc.—Zinci Oxidum, U.S. Mode of preparation—form—colour—odour—taste—relations to water and alcohol—effects on exposure.

Therapeutical applications, internal and external. Dose, 5 grains. Ointment officinal under the name of *Unguentum Zinci Oxidi, U.S.* Uses.

Impure Oxide of Zinc.—Tutty.—Tutia. Used in the form of ointment.

Carbonate of Zinc.—Zinci Carbonas, U.S.—Calamine. Source—preparation—chemical nature—form—colour—taste—relation to water. Used externally in the form of cerate—*Turner's cerate* (*Ceratum Zinci Carbonatis, U.S.*). Applications.

BISMUTH.—BISMUTHUM. *U.S.*

Sub-nitrate of Bismuth.—Bismuthi Subnitras, U.S.—White oxide of bismuth.—Magistery of Bismuth. Mode of preparation—chemical nature—form—colour—taste—smell—effects on the system—local effects of over doses. Therapeutical applications—effect on the stools. Dose, 3 to 10 grains in powder or pill.

SILVER.—ARGENTUM. *U.S.*

Nitrate of Silver.—Argenti Nitras, U.S.—Lunar caustic. Mode of preparing it—chemical nature—forms in which it is kept in the shops—consistence—colour—fracture—solubility in water and alcohol—taste of the diluted solution—effects of light—effects of heat—incompatibles—influence of common salt.

Effects on the system—effects on the stomach—poisonous effects—proofs of absorption—effects on the skin—explanation—effects when externally applied. Therapeutical applications.

Dose, an eighth of a grain, 3 times a day, gradually increased to 3 or 4 grains. Caution necessary. Given in pill. Mode of preparing the pill—treatment in cases of over doses—antidote.

Chloride of silver and *oxide of silver* have been substituted for the nitrate.

Several *preparations of gold* have been used, but not generally adopted. Complaints to which they have been applied.

SULPHURIC ACID.—ACIDUM SULPHURICUM. *U.S.*

Formerly *oil of vitriol.* Not used in its concentrated state. Incompatibles.

Effects on the system. In small doses sufficiently diluted, increases the appetite, promotes digestion, and acts at the same time as a general astringent and refrigerant. Larger doses occasion uneasiness or pain in the stomach—still larger, inflammation or disorganization. Concentrated, a violent corrosive poison. Mode of treatment and antidotes.

Remedial applications, internal and external. Used in the following forms.

Diluted Sulphuric Acid.—Acidum Sulphuricum Dilutum, U.S. Preparation—sensible properties—much diluted when taken—swallowed through a quill. Dose, 10 to 30 drops, 3 times a day, or more frequently, in f℥iij. or f℥iv. of plain or sweetened water.

Aromatic Sulphuric Acid.—Acidum Sulphuricum Aromaticum, U.S.—Elixir of vitriol. Preparation—colour—odour—taste. More used than the preceding. Dose and mode of administration the same.

Ointment of Sulphuric Acid. Made in the proportion of ℥j. of acid to ℥j. of lard. Mutual decomposition. Applied in scabies and other eruptions.

by albumen followed by castor oil mixed with albumen- antidote is albumen as egg-white, milk, wheat flour; Iron filings recommended: sugar]

5. Internally in intermittents (Sulph: copper gr. j; Sulph: quinia gr. viii; Opium gr. j - divide into four pills, one to be taken every two hours) - epilepsy, chorea, in German for pulmonic affections occurring in scrof. Externally often applied in substance to ulcers either for repressing "proud flesh" or hastening cicatrization; & for these purposes it is one of the best agents. [Solutions from collyria, & injections in gonorrhea do. Solution contain from 10 to 20 to the oz. aq. ℥j]

6. Ammon: copper by rubbing sulph: copper + carb: ammon: together in a mortar - the rationale is not well understood probably the sulph: acid leaves the copper & unites with ammonia, the oxide of copper acting as an acid unites with ammonia if there be an excess of the latter, forming a cuprate of ammon: - [Ox: of cop: 1 atom + Ammon: 2 + Sul: acid 1 + water 1] - colour azure - odour ammon: - taste astring: metal: - sol: in water - ammon: evaporates on exposure - incompat: are sulph: of copper & the acids - a test for arsenic by producing arsenite of copper or Scheele's green -

7. Chronic neuralgia affect: as epilepsy & chorea - it is no doubt useful in epilepsy dependent on functional derangement merely.

Zinc.

1. Sulph: of Zinc. By direct action of dilute sulph: acid on zinc, filtering & evaporating - Ox: of Z. 1 + acid 1 + water 7 - white acicular crystals, four sided prisms resembling Epsom salts - metal: astring: - very sol: in water not sol: in al: - efflorescent - decomposed by intense heat first undergoing liquid fusion - incompat: are alkalies & alkal: earths & their carbonates, double salts of lead & astring: veg: infusions -

2. Small doses astring: - in full doses a prompt, powerful but safe emetic, without producing much nausea -

duction of the pulse; in a few days the blackened cuticle scales off without affecting the cutis vera. Has been employed [with perhaps most frequent success than any other remedy] in epilepsy - in chorea - but it is chiefly used in chronic inflammation of the mucous membrane of the stomach & intestines. I habitually employ it in these cases and have cured cases apparently hopeless when nothing could be borne on the stomach & the mucous membrane was almost destroyed. (For external employment see escharotics.)

3. Pill made with gum & loaf sugar or crumb of bread - treat an overdose by mucilaginous drinks & common salt - antidote is the chloride of sodium or common salt - a solution of common salt will relieve the pain if excessive if the local application.

4. Chloride obtained by precipitation by muriatic acid from the nitrate, - a sandy white precipitate. Oxide by precipitate from the nitrate by an alkali as lime water - colour grayish brown. The Iodide has been much praised & is said not to discolour the skin but this requires further proof.

5. In venereal diseases. Gold leaf formerly used to cover pills.

Sulphuric Acid.

1. Incompat: are alkal: & alk: earths & their carbonate & salts of vegetable acids, metals, their oxides & many of their salts.

2. Concentrated it is a violent caustic acting both by combining with the water of the tissues & with the albumen - the effects of the concentrated acid when swallowed are corrosion of the soft parts & collapse - antidotes are chalk, magnesia or even soap or infusion of wood-ashes with diluents - treatment afterwards is the same as for gastro-enteritis - [for external corrosions a lotion of soap & water or simple water is proper.]

3. In debility of digestive apparatus in convalescence - in profuse & colliquative sweats [the best remedy] - in low fevers - in intermittents combined with bark - in night sweats of hectic - passive hemorrhages & diarrhoea - has had much reputation as a cure for colica pictonum - [in skin diseases -

ecs especially lichen, prurigo & chronic nettle-rash no remedy is so useful in relieving the itching as dilute sulph: acid taken internally—Pereira.]

4. Dilute sulphuric acid. One part by measure of acid to thirteen of water mixed gradually—condensation & evolution of heat ensue—

5. Elix: of Vitriol. Prepared from rectified spirit, sulph: acid & aromatics, (cinnam: & ginger—dark red, odour peculiar agreeable—taste very sour, & somewhat aromatic.

6. Ointment. Decomposition not well ascertained possibly the acid unites with the oxide of glycerile to form sulphate of glycerine & with the margaric & oleaic acids of the lard—the ointment is buff-coloured—a powerful stimulant.

Nitric Acid.

1. Incompats are for the most part those of sulphuric acid alkalies, earths, carbonats, vegetable salts & metals &c.

2. In poisoning the treatment is exactly the same as by sulph: acid. It is employed as sulph: acid—not so effectual in colliquative & hectic sweats—employed frequently in the remissions of fevers—[Externally the concentrated acid is successfully employed in sloughing ulcers applied on lint tied to a stick—largely diluted (50 or 60 drops to a pint or quart of water) recommended by Sir Astley for Lotion to ulcers.]

3. Hopes mixture is not a specific—useful in chronic cases.

4. (For external use see above [2. 3]). The ointment is used in skin diseases as porrigo & scabies also syphilitic ulcers

Muriatic Acid.

1. By distilling a mixture of chloride of sodium & common salt, & condensing the muriatic acid gas evolved, in a Wolffs apparatus—a liquid, colourless if pure—Sp. gr. 1.16 [2.Ph.]—peculiar pungent disagreeable odour—taste when diluted very acid—Incompatibles are alkalies, earths, metals & their oxides &c salts of silver & lead. Effects in small doses like the other mineral acids—externally a corrosive poison. Uses—low forms of fever—malignant fe-

vere & malignant sore-throat-[gangle in ulcerations of the mouth and throat-the mouth should be well rinsed after using it on account of its powerful action on the teeth-may be applied by a sponge.

Nitro-muriatic acid.

1. By mixing one part by measure of nitric & two of muriatic acid-reaction produces chlorine, nitrous acid & water-this takes place only when the acids are highly concentrated, if they are feeble the addition of a little sulphuric acid will cause the reaction-

2. Effects similar to those of nitric acid-Uses-in cases where mercury has failed or cannot be used although indicated-has proved most efficacious in chronic hepatitis, skin diseases, secondary syphilis, marasmus &c-may affect the gums in a manner like calomel-have been in the habit of prescribing it with much benefit in chronic bowel affections as, muco-enteritis-General flabby state, relaxation of muscles, uneasy sensations in the stomach, & general debility. Externally applied as a pediluvium or by sponging-feet to be kept in the bath until a general sensation of tingling is produced.

3. Water of Chlorine-[aqueous solution of chlorine gas-used internally in putrid & malignant fevers & sore-throat-externally in skin diseases & as a gargle in putrid sore throat and lotion for fetid ulcers &c.] Chlorine gas inhaled is not useful in tubercular phthisis, but it is beneficial in chronic laryngeal & bronchial affections. [An antidote in poisoning by hydrocyanic acid & sulphuretted hydrogen.]

NITRIC ACID.—ACIDUM NITRICUM. *U.S.*

Directed in the Pharmacopœia of sp. gr. 1.5, but never so strong in the shops. Two forms in the shops, distinguished as *nitric* and *nitrous acids*. The former colourless or slightly yellowish—the latter of a deep orange. The latter consists of nitric acid with some deutoxide of nitrogen, and by dilution is converted into nitric acid—therefore as taken is not different from the former. Incompatibles.

Effects on the system, those of a tonic and refrigerant. Concentrated, a corrosive poison. Treatment of the poisonous effects. Therapeutical applications. Dose of the strongest acid, 2 to 5 minims in a wineglassful or more of water, which it renders decidedly but agreeably sour. The acid often weak in the shops. Its strength judged of by its taste when diluted. Dose gradually increased—if too large, produces cramps in the stomach. *Hope's mixture* of nitrous acid, camphor water, and laudanum, given in dysentery, diarrhœa, and cholera infantum. External use of nitric acid, diluted or in the form of ointment. It should never be given in silver.

MURIATIC ACID.—ACIDUM MURIATICUM. *U.S.*

Mode of preparing the officinal acid—form—colour—specific gravity—odour—taste when diluted. Incompatibles. Effects on the system. Therapeutical applications. Dose, 5 to 20 drops, in f℥iij. or f℥iv. of sweetened water, frequently repeated. In gargles, f℥j. to f℥vj. of water.

NITROMURIATIC ACID.—ACIDUM NITROMURIATICUM. *U.S.*

Mode of preparing—chemical changes—composition of the resulting fluid. Proofs that reaction has taken place. Advantage of adding sulphuric acid when the nitric and muriatic are feeble.

Effects on the system. Therapeutical applications. Dose, 2 to 10 drops, 3 or 4 times a day, in sufficient water—to be gradually increased as the stomach will bear it. Modes of external application—in wooden vessels. Strength for external use, f℥j. to Cong. j. for bath —f℥ij. to Cong. j. for footbath. Temperature 96° F.

Water of chlorine—nature—therapeutical applications. *Chlorine* itself inhaled in affections of the chest. Great danger from its incautious use. It should always be very largely diluted with atmospheric air.

CLASS III.

ARTERIAL STIMULANTS.

General Observations.

Medicines which excite the circulation, with little comparative influence on the nervous system.

Applicable to cases of great prostration, when sufficient energy of system remains to sustain it at the point to which it may be elevated. Much care is requisite in their use even in cases of prostration. When this depends on external violence, as in concussion of the brain, or occurs in the first stage of acute diseases, as in the chill of fevers, caution is necessary, in consequence of the danger of the subsequent reaction. In such cases, their internal use is to be avoided unless essential to life, and external stimulation is greatly preferable. When the debility occurs in the course of an acute disease, they may be used more freely, as there is less danger from reaction. The existence of inflammation is not always an obstacle to their use. In such a case when called for by great depression of the vital actions, more care is demanded than in the absence of inflammation. In the suppurative or gangrenous stage of inflammation, they may be used freely if called for by the symptoms. The tendency here is to health, and stimulants support the vital actions till the requisite changes have been accomplished.

The number belonging to this class is very large, but most of them possess other properties also, which rank them in other classes. Those only are mentioned here which are used chiefly in reference to their stimulant properties.

CAYENNE PEPPER.—CAPSICUM. *U.S.*

Fruit of *Capsicum annuum*, and other species. An annual plant, cultivated but not indigenous in this country.

1. Character of the fruit—shape—nature of the surface—colour—internal arrangement—colour of the powder—effect of exposure—odour—taste—relations to water and alcohol.

Active ingredient, a peculiar acrid principle called *capsicin*, not volatile.

2. Effects on the system—therapeutical applications.

Used in substance, infusion, and tincture. Dose of the powder, 5 to 10 grains, given in pill—of the infusion, made with two drachms to half a pint of boiling water, f℥ss.—of the tincture, f℥j. or f℥ij. Mode of preparing Cayenne pepper as a gargle.

OIL OF TURPENTINE.—OLEUM TEREBINTHINÆ. *U.S.*

1. Often called *spirit of turpentine*. Source and mode of preparing it.

2. Properties—form—colour—odour—taste—specific gravity—solubility in water, alcohol and ether—chemical constitution—effects of exposure—mode of separating the resin.

3. Effects on the system. Therapeutical applications with a view to its stimulant properties.

Dose, 5 to 20 drops every half hour, hour, or 2 hours, in acute cases—2 or 3 times a day in chronic cases—to be suspended if it induce strangury. Best given in emulsion with gum Arabic, loaf sugar, and cinnamon water or mint water. If it purge, laudanum may be added, when not contra-indicated by disease of the brain.

PHOSPHORUS.

1. A powerful stimulant, perhaps the most powerful. Dangerous. Seldom proper to prescribe it. Should never be given in substance. Best administered in oleaginous or ethereal solution. Dose, one-twelfth of a grain.

CARBONATE OF AMMONIA.—AMMONIÆ CARBONAS. *U.S.*

1. Improperly called *volatile alkali*, as this name belongs to pure gaseous ammonia. Mode of preparing it—properties—form as it is kept in the shops—colour—translucency—smell—taste—solubility in water and alcohol—effect on vegetable blues—precise chemical nature—change on exposure in appearance and composition—signs of goodness.

2. Effects on the system. Increases the circulation and invigorates generally the vital functions, without any decided tendency to the brain. Operates upon the nervous system in general more than any other medicine placed in this class, and might be ranked with

Capsicum

1. Fruit a dry inflated berry - shape varies according to species oblong round, or cordate - surface smooth polished - four cells hollow seeds flat white chestnut at the centre - powdered becoming yellow by age - odour none - taste hot fiery - yields virtues to water &
2. Externally rubefacient - internally cause heat in stomach & if taken largely inflame: - used in low forms of typhus, but cannot be alone depended on from its want of action on the brain - in stomachs debilitated by stimulants - the great remedy in scarlet fever when the eruption does not readily appear, combined with quinia - also in the sore throat of scarlatina especially with a tendency to gangrene - in torpid stomachs of drunkards.
3. Gargle in the proportion of ℥ss to ℥j of Capsicum to a pint of water; but in malignant sore throat where there is a want of sensibility it should be much stronger. In cases of young children it may be applied with a large camels hair pencil.

Oil of Turpentine.

1. By distilling the oleo-resinous juice of the Coniferæ, especially the pine, fir & larch (Pinus, Abies, Larix); the residue is common rosin.
2. Limpid colourless liquid - odour peculiar disagreeable - taste pungent - Sp. gr. 0.86 - slightly soluble in water or alcohol, very sol: in hot alcohol & ether - consists of carbon & hydrogen - on exposure absorbs oxygen & becomes yellowish & somewhat denser from the formation of a resin which imbains its virtues: this may be dissolved out by alcohol - often contains crystals.
3. In med: doses produces warmth in stomach soon followed by quicker pulse & general warmth - in larger doses former in the urine, & if long continued produces burning & inflammation of urethra - very large doses purge & affect the head. Few stimulants produce so much warmth & arterial excitement with so little effect on the brain. in fevers of a low grade, particularly in the old stage of typhus, when the tongue

begins to clear but is not entirely clean, the tongue dry, stomach turnid some delirium (and in such circumstances there is usually ulceration of the intestines). I have found turpentine of much value & have used it in a great number of cases with very great success; the tongue ~~beginning~~ becoming moist & clean in 36 or 48 hours. The same stimulant & alterative power of turpentine may be employed in the advanced stages of peritonitis, gastritis &c even in cases approaching to gangrene - chronic rheumatism & gout particularly lumbago & sciatica - flatulent colic - gout in stomach - pneumonic hemorrhages, it is one of the most effectual remedies in hæmoptysis, hæmaturia &c when there is not an excess of arterial action - epilepsy & tetanus.

Phosphorus.

1. Dangerous from its being, as is supposed on good grounds, to undergo combustion in the stomach from the presence of atmospheric air. I would advise that its use be dispensed with altogether - other - safer remedies will answer the same ends.

Carbonate of Ammonia.

1. Prepared by subliming a mixture of muriate of ammonia and chalk - fixed, brittle, whitish translucent, fibrous - kept in cakes about 2 inches thick - odour pungent ammoniacal - taste pungent acrid - soluble in water not in alcohol - unites vegetable blues & turmeric - a hydrated sesquicarbonate - on exposure loses its basic, water & ammonia, & also its translucency & becomes the bicarbonate - which is almost inert - tests of goodness, are translucency, pungent fumes & action on turmeric.
2. Stimulant antiseptic, expectorant antacid
3. One of the safest stimulants in low fevers & one which may be first resorted upon from its want of action on the brain, an objection to alcohol &c - In typhoid pneumonia with great frequency of pulse, coolness of skin, & humid deposition which may be mistaken for an increase of

inflam: it is very useful. In low fevers attended with a debility which must be diminished in the breath its anta cid. as well as stimulant properties prove beneficial.

† The aro: spirit of ammonia is more used in stomach complaints & is treated of among the antacids (q. v.).

CLASS IV.

NERVOUS STIMULANTS.

General Observations.

Medicines which to the power of stimulating the heart and arteries, superadd an influence of an excitant character over the nervous system. They exhibit no special tendency to the brain, but appear to act equally over the whole nervous system which controls the functions of relation. Their action upon the nerves is not attended with any very obvious phenomena in the healthy state. Perhaps the imagination and the mental faculties generally may be somewhat excited, and the flow of spirits may be brisker. But their influence is powerfully exhibited in certain deranged conditions of the nervous system. They are applicable to all cases of this kind not connected with inflammation or arterial excitement, and particularly to such as are associated with general debility.

One of the modes in which nervous derangement is exhibited is spasm. When this arises from irregular distribution of the nervous influence, dependent upon debility or any other cause not connected with inflammation, it may often be controlled by these medicines.

1. Hence the name of *antispasmodics*. Reasons for considering this an improper designation.

Many other symptoms of nervous derangement besides spasm relieved by nervous stimulants. Among these may be mentioned morbid vigilance, restlessness, dejection of mind, hypochondriasis, and even mental derangement.

2. It is true that all these effects are also obtained from the cerebral stimulants or narcotics; but these, in addition to their general nervous influence, act with especial energy on the brain, and on this account cannot always be given safely in cases which call for the nervous stimulants. They are, besides, less powerful, as a general rule, than the latter class, in the general influence alluded to.

3. Remarks on the modus operandi of this class of medicines.

MUSK.—MOSCHUS. U S.

1. Product of *Moschus moschiferus*. Native country of this animal. Its general character and habits. Part from which the musk is obtained. Countries from which it is imported.

2. Appearance externally and internally of the pods in which the musk is contained. Modes of adulteration, and substances with which it is adulterated. Mode of discovering adulterations. Relative value of the commercial varieties of musk.

3. Properties of musk as in the shops—form—consistence—colour—odour—taste—relations to water and alcohol—complexity of its chemical composition—evidences of good quality—mode of keeping.

4. Effects on the system. Therapeutical applications.

Given in pill, or suspended in the form of emulsion. Medium dose, 10 grains; but the dose varies from 5 grains to ʒj. To children often advantageously given in enema.

5. *Artificial musk.* Mode of preparing.

CASTOR.—CASTOREUM. *U.S.*

1. Product of *Castor fiber* or beaver. Part of the animal from which it is derived. Sensible properties. Little used. Dose in substance, 10 to 20 grains—in tincture, f ʒj. to f ʒij.

ASSAFETIDA.—ASSAFŒTIDA. *U.S.*

Inspissated juice of *Ferula Assafœtida*—an herbaceous umbelliferous plant of Persia.

1. Mode in which the juice is obtained and hardened. Rout by which it is sent into the market.

2. Shape in which it is kept in the shops—consistence when fresh—effects of time on its consistence—colour externally—colour and general aspect of the fracture—effect of exposure on the colour—odour—taste—effects of time on the smell and taste—effects of heat—chemical nature—relations to water and alcohol—influence of water on the tincture.

Active ingredients, resin and volatile oil.

3. Effects on the system. Therapeutical applications. Dose, 5 to 20 grains or more. Given in pill or emulsion.

4. *Mixture of assafetida.* Dose of the gum-resin in enema, ʒss. to ʒij. with ℥ss. of water. Dose of the tincture, f ʒj. Sometimes used externally as a plaster.

Nervous Stimulants.

1. The term antispasmodic injectionsate is applied to designate this class because the class does not include all the remedies which alleviate spasm. Thus cold bathing, singing &c are antispasmodic when the spasms proceed from mental excitement or from inflammation in the part producing by nervous communication spasm in another.
2. When cerebral stimulants act slightly they are nervous stim.
3. From their action on the excito-motory system of nerves, this class of remedies is supposed to operate by reflex action on the true spinal nerves. That of them have a fetid odour to which some attribute their effects all of them however are not unpleasant.

Musk.

1. Native of the Himalay mountains - similar to the deer, distinguished by the absence of horns & presence of canine teeth, timid solitary not in flocks caught in snares or shot - The musk is contained in a sac between the prepuce & umbilicus - Imported from Canton when obtained in China or Thibet, & from Russia when in Siberia.
2. The pod is oval 1½ inches long, flat when cut off & convex on the other side which is covered by stiff hairs arranged circularly round the orifice. The pods are imitated by the Chinese by sewing together a piece of membrane & of the bride of the animal, this detected by the absence of an orifice & the want of the circular arrangement of the hairs - grain musk is never seen in commerce it is adulterated with dried blood & many other articles, detected by chemical tests. Russian is inferior to the Chinese, he Tonkin is less powerful, & nauseous.
3. Granular - unctuous - dark reddish brown - odour heady & very persistent, if not intense, not disagreeable - taste bitter subacrid - imparts to water &c - composition not well known - should be neither pale nor very dark but brown & possess much odour.

+ Excites the nervous energy without sensibly affecting the brain

and moderately accelerates the circulation – In phthisis fever with colliquative sweats & sanguine – no remedy is more efficacious in obstinate hiccup – in infantile convulsions from spasm of the bowels one of the most efficacious remedies (Dr Cornish) – may be used in all nervous diseases.

5. By the action of nitric acid on oil of amber, the oil is converted into a resin by uniting with the oxygen of the acid.

Castor.

1. In two bags between the genitals & anus in both female & male. Colour brown dirty – taste disagreeable – odour offensive. I have never used it.

Asafoetida.

1. From incision in upper part of root the juice exudes, is collected & hardens in the sun – down Persian gulf to Bombay, thence to Europe.

2. At first soft – becomes hard – externally yellow or pinkish brown – fracture conchoidal – waxy or scaly translucent – on exposure becomes violet red which in a few days becomes pinkish brown – odour alliaceous & persistent – acrid and bitter – smell & taste dissipated by time – fusible & inflammable – a gum-resin – therefore soluble in alcohol forms a milk (emulsion) with water – water precipitates the resin from the tincture & forms an emulsion.

3. Causes sensation of heat in mouth & stomach, & eructation. Excites the nervous system, accelerates the pulse, & promotes perspiration & carminatives – spasmodic & convulsive diseases – hysteria, epilepsy & flatulent colic – flatulent colic of infants in enema & otherwise.

4. Mistura, Mistura Asafoetida called also hac asafoetida – triturate Asafoetida ʒij in Water Oss. Dose a table-spoonful.
The asafoetida pills of the Pharmacopoeia are made by incorporating ¼ parts of asafoetida with 1 part of soap.
Pills of Aloes & Asafoetida consist of equal parts of soap aloes and asafoetida incorporated.

Valerian

1. Rhizome with fibres 2 to 6 inches long - yellowish white - grey brown - white internally - powder light brown - odour strong peculiar, attractive to cats - taste warm camphorous, slightly bitter - sub-acrid & nauseous - to water & alcohol -
2. Oil pale green or yellowish, limpid, aromatic, bitter, camphorous, not acrid - odour camphorous.
3. Powerful cerebro-nervous stimulant. Epilepsy, chorea &c.

Oil of Amber.

1. Amber is found on the shores of the Baltic, and is supposed to be disengaged from beds of lignite - probably the resin of an extinct species of pine - pieces irregular - translucent - yellow or red - fracture conchoidal or uneven - tasteless - odourless - fuses then inflames with a yellow flame & peculiar odour - by distillation it yields succinic acid & oil of amber &c.
2. By distilling from amber in powder mixed with an equal weight of sand - pale yellowish colour deepened by age - strong agreeable odour - purified by redistilling with water.
3. Pale yellow - strong pleasant odour - pungent taste - inflammable - becomes darker - is volatilized by exposure
4. Externally a powerful local irritant & rubefacient - internally a nervous & arterial stimulant, & emmenagogue - Externally in rheumatism & paralysis - internally in hysteria and amenorrhœa.

Other nervous stimulants.

1. Garlic - See Expectorants page 54.
2. Tea & coffee - Antiperiodics, tea is sedative to the circulation - Used to procure sleep, & to counteract the effects of opium alcohol & to relieve intoxication - in some cases of head-ache - as a diluent & sedative weak tea is very useful in febrile and inflammatory complaints - coffee is an excellent cordial & restorative after excessive fatigue, & to those who are attempting to relinquish the immoderate use of alcohol. Tea & coffee if strong are said to produce in nervous

impairments tremors, anxiety, palpitation, disordered vision & feverishness. Tea from its astringency is a convenient antidote in poisoning by tartar emetic or the alkalies; and here green-tea is preferable from its superior astringency.] Pereira

5. Skunk cabbage.] Ictodes foetidus — in meadows abundant in the Middle & Northern states — flowers a spathe & spadix appears before the leaves every part of the plant on being broken emits an odour exactly similar to that of the skunk Viverra mephitis — recent root has the strong & unpleasant odour of the plant, acrid when chewed like the Arum — the odour resides in a volatile principle which is soon lost by exposure — the dried root powdered was recommended by the Rev. Dr. Cutler of Massachusetts — acts on the nervous system has been used in hysteria, asthma, epilepsy &c — dose in powder 10 to 20 grs. 3 times daily.] Bigelow.

GALBANUM.—SAGAPENUM.—AMMONIACUM.

These are all gum-resins, and possess properties as nervous stimulants analogous though much inferior to those of assafetida. Neither of them, however, is at present much employed in reference to these properties. *Galbanum* is occasionally used in plasters, and *ammoniac* as a stimulant expectorant.

VALERIAN.—VALERIANA. *U.S.*

Root of *Valeriana officinalis*—an herbaceous perennial, indigenous in Europe.

1. Shape and aspect of the root—colour—colour of the powder—odour—taste—relations to water and alcohol.

Active ingredients, a volatile oil, and a volatile acid called the *valerianic*, which rises with the oil in distillation.—Sensible properties of the oil of valerian.

2.
3. Effects on the system. Therapeutical applications. Administered in powder, infusion, tincture, and oil. Dose of the powder, 30 to 90 grains—of the infusion, f℥ij.—of the tincture, from f℥j. to f℥iv.—of the oil, from 4 to 6 drops—each dose to be repeated 3 or 4 times daily. Decoction and extract objectionable.

OIL OF AMBER.—OLEUM SUCCINI. *U.S.*

1. Origin of amber—shape—size of the pieces—translucency—colour—fracture—nature of the surface—taste—odour—relations to water and alcohol—effects of heat—products of distillation.
2. Mode of preparing oil of amber—appearance of the impure oil—mode of purifying.
3. *Rectified Oil of Amber.—Oleum Succini Rectificatum, U.S.* Consistence—colour—odour—taste—effects of heat—relations to water and alcohol—effects of exposure.
4. Effects upon the system. Therapeutical applications, internal and external. Dose, from 5 to 15 drops, in emulsion.

Various other vegetable products exert a stimulant influence over the nervous system. Among them are the following;—

1. GARLIC.—ALLIUM. *U.S.* Bulb of *Allium sativum.* Much used externally to relieve or obviate spasm, and to allay nervous irritation. The *bruised bulbs* applied in poultices to the feet, and with hot brandy as a lotion to the spine, chest, and abdomen. Treated of more fully in another place.
2. TEA and COFFEE also, together with tonic and astringent properties, possess those of a powerful stimulant to the nervous system. Effects upon the system. Therapeutical applications.
3. SKUNK CABBAGE.—DRACONTIUM. *U.S.* Root of *Symplocarpus fœtidus.* An indigenous plant. Place of growth—character of the plant—odour of the recent root—effects of time and exposure—influence on the system—therapeutical application.

CLASS V.

CEREBRAL STIMULANTS.

General Observations.

Medicines which, with a stimulating influence over the circulation and the general nervous system, conjoin a peculiar determination to the brain. Called *narcotics* from the stupor which they produce in large doses. Reason for abandoning the old class of narcotics. The only points of resemblance between individuals composing the class of *cerebral stimulants*, are those mentioned in the definition. In all other respects they differ more or less from one another. They differ in the degree of their power, in the relative degree to which they affect the different systems or organs respectively, in the precise manner of affecting these systems or organs, and in their several local tendencies. Illustrations of these statements. The different character of the cerebral symptoms produced by the different individuals, is partly perhaps ascribable to a direction to different parts of the brain. Illustrations. Cerebral stimulants, like all others, are followed by prostration proportionate to the previous excitement. Caution is requisite not to confound this prostration, which is a secondary effect of the medicine, with that apparently sedative influence upon certain functions which attends its primary action. Explanation.

In very large doses, the cerebral stimulants exert a less stimulant influence over the circulation, and a greater energy of action on the brain, which they disable from receiving and transmitting due impressions. Life is destroyed by the cessation of respiration consequent upon the want of cerebral influence. Proofs of this fact.

Suggested that these medicines may act partly through the medium of the brain and nerves, partly in consequence of absorption and entrance into the circulation. Perhaps the different symptoms produced by them in different stages of their action may be ascribed in some measure to this cause.

They produce their peculiar effects on the system to whatever part they may be applied.

Their influence is diminished by habit more rapidly than that of any other class of medicines. Having no corrosive power, and in many instances no decided tendency to excite local inflammation, they may be given, in gradually increasing doses, till an enormous amount may be taken at one time with present impunity. It is necessary gradually to increase their dose in order to obtain from them the same impression. When the susceptibility to one is lost or very much diminished, another of analogous properties may be advantageously substituted.

These medicines require to be given with caution. Besides the immediate danger from an overdose, they produce, when long continued, conditions of system which often result fatally. They wear out healthy susceptibility, and consequently produce ultimately a state of general debility, while, by the over excitement of particular organs, they give rise to local inflammation.

As therapeutical agents, they are more powerful than any other class in supporting the system under a temporary failure of its powers. Reason for this stated. They may be made to act as substitutes for the purely nervous stimulants, by reducing the dose; as in this way their general influence over the nervous system is obtained, with less of their action on the brain. Illustrations of this fact. Difference in their mode of action, in cases of nervous disorder, as nervous stimulants and cerebral stimulants.

Different names given to the medicines belonging to this class, in reference to different effects which they produce. Thus they are called *narcotics* from the stupor they occasion, *anodynes* from their influence in relieving pain, and *soporifics* or *hypnotics* from their effect in inducing sleep.

ALCOHOL.

Product of vinous fermentation. Explanation of this process. Different fermented liquors. Distillation of these affords the spirituous or distilled liquors. Proof spirit. Different spirituous liquors. Proportion of alcohol in these liquors. By redistillation, officinal alcohol of sp. gr. .835 obtained. Alcohol cannot be obtained entirely pure by distillation. Absolute alcohol not used in medicine. Officinal alcohol or rectified spirit contains 15 per cent. of water. Uses of officinal alcohol in pharmacy and medicine. *Diluted alcohol* of the

Cerebral Stimulants.

1. Because stupor is a secondary effect — the result of previous excitement.
2. Thus opium constipates, while hyosciamus relaxes the bowels. aconite contracts & belladonna dilates the pupil; belladonna causes dryness of the throat & aphonia.
3. Opium is said to act on the cerebrum, belladonna on the tubercula quadrigemina, and alcohol in small doses on the cerebellum.
4. The sedative influence of the primary effect is the pleasurable dreamy sensation which is the result of the stimulus to the nervous system, &c.
5. In poisoning by opium e.g., if artificial respiration be sustained until the brain recovers from the shock, the patient survives.

Alcohol.

1. Sugar, water, & a ferment are exposed to heat & air — bubbles of the ferment containing air rise to the surface & then burst. This ceases the liquor becomes clear — sugar is lost & alcohol & carb: acid formed — the weight of which is equal to that of the sugar — hence inferred that the [illegible] converted into alcohol + carb. acid. The product [illegible] fermented liquor [illegible] when from [illegible] as grapes [illegible] it is called wine when from [illegible] ale [illegible] &c.
2. [illegible] sp. gr. 920° at 60°F. is taken as standard for measuring the strength of spirits, rectified [illegible] proof spirit. This contains one half water [illegible] spirits differ according to [illegible] from grapes, [illegible] Brandy, [illegible] Rum, [illegible] Gin, Hollands, Whiskey, — their [illegible] aroma each depends on volatile oils.
3. [illegible] alcohol is obtained by distilling [illegible] over carb. [illegible] or lime.
4. Stimulant [illegible] solvent [illegible] oils & camphor, [illegible] pharmaceutical purposes, & for [illegible]ation.

[illegible] in [illegible] importance with [illegible] -rity in high latitudes — especially [illegible] in [illegible] of the varieties of [illegible] — [illegible] used [illegible] [illegible] of change in the type of diseases [illegible] tending [illegible] to typhoid diseases. The rule for their employment [illegible] if under their use the skin becomes softer, [illegible] slower [illegible] more [illegible]; [illegible] if pulse [illegible] quickened, skin hotter, delirium, [illegible], [illegible].

Sulphuric Ether

1. By distilling sulphuric acid with alcohol — limpid — colourless — sp. gr. 700 in the shops 740 — taste [illegible] pungent — odour peculiar, agreeable — very volatile — by evaporation it produces cold — boils at 98° — very inflammable — its vapour is inflammable, therefore it should not be [illegible] out [illegible] a lighted [illegible] [illegible] [illegible], [illegible] [illegible] in all [illegible] [illegible].

2. A highly diffusible stimulant, [illegible] [illegible] — [illegible] than alcohol — acts as a nervous stimulant without [illegible] exciting the brain. Much used by being inhaled, in small quantities it exhilarates like nitrous oxide and produces depression. [illegible] [illegible] [illegible] [illegible] [illegible] inhaling a teaspoonful of [illegible] vapour [illegible] [illegible], it may cause apoplexy &c — Used in nervous [illegible] [illegible] [illegible] [illegible] by [illegible] is spasmodic action — in violent colic, cramp [illegible] [illegible] [illegible] in stomach, [illegible] — in [illegible] cholera, typhoid [illegible] — [illegible] the paroxysm of spasmodic asthma] — the dose should be repeated frequently to keep up [illegible] [illegible] in [illegible] to exhibit tonics after the first dose. [Externally to produce cold in hernia — in headache [illegible] [illegible] [illegible] — [illegible] to surface. it is [illegible] [illegible] — Sometimes used with [illegible] [illegible] [illegible] [illegible] in [illegible] [illegible] in asthma, & other dyspnoea. [illegible] incorporating with spermaceti

gr. ij, to ℨj is prescribed miscible with water. Taken may be inhaled from a bladder in vapor, in dyspnoea. Externally in fevers, as a lotion, when as a rubefacient it should be confined to the surface with the hand as in nervous headaches—

3 By mixing Ether, Alcohol, & spirit of wine. (spirit of wine is left in the retort after distilling sulphuric ether with an excess of alcohol) an heavy, nearly colourless, the active ingredient) — Peculiar aromatic odour & bitter taste — genuine in water becomes milky on the addition of water & has the peculiar odour in the ether as there is sometimes sold a mere mixture of alcohol & ether — Used in restlessness want of sleep & derangement nervous sensations, & in nervousness of dyspeptics remedy useful — does not act like opium on the brain, quiets the nerves.

Opium.

1. An annual herb — leaves irregular in shape glaucous beneath — petals 4 — calyx 2-leaved, deciduous — black variety has red violet or white petals with a purple base & black seeds — the white variety has white petals & seeds — Native of Asia & Egypt, cultivated in Egypt, Hindostan, Asia Minor, Germany &c.
2. In Europe cultivated for the capsules & seeds from which the oil for painting is obtained.
2. capsules differ in shape & size — being oval or flattened, or round, — from a cherry to a large orange — texture papery, are smooth — hollow, seeds round a central receptacle — taste bitter — use like that of opium & for fomentations — decoction syrup & extract.
3. A bland oil like olive oil in properties & uses, also used for paint.
4. Asia Minor, Egypt & Hindostan. The capsules are punctured in the evening, a juice exudes which is collected next morning & this allowed to consolidate is opium — imported from Smyrna, Constantinople, Egypt & India; hence the same commercial varieties
5 of various masses as large as oranges, but being packed when soft they become irregular — brown red externally & adhering

5. Pharmacopœia consists of equal measures of officinal alcohol and water. Uses of diluted alcohol. Importance of knowing whether a tincture is prepared with *alcohol* or *diluted alcohol*.

6. Distilled liquors sometimes used internally. Brandy preferred. Circumstances which justify its employment. External use.

7. Fermented liquors generally preferable as stimulants. Reasons for this preference.

8. *Wines.* Origin and composition. Proportion of alcohol existing in them. Madeira, Teneriffe, or Sherry, generally preferable as stimulants; Port wine, when an astringent is indicated. Disadvantages of the light wines. *Wine whey.* Mode of preparation. Uses.

9. Mode of preparing *spiced wine.* Uses.

10. *Malt liquors.* Peculiarity of composition. Under what circumstances preferable to wine. Porter or ale better than beer.

11. Therapeutical applications of alcoholic liquors. Evidences of their favourable and unfavourable action.

SULPHURIC ETHER.—ÆTHER SULPHURICUS. *U.S.*

1. Mode of preparation—form—colour—specific gravity—taste—odour—facility of evaporation—effects of evaporation—point of ebullition—inflammability—practical caution—relations to water and alcohol.

2. Effects on the system. Consequences of its inhalation. Therapeutical applications. Dose, from f℥ss. to f℥j. with sweetened water. Mode of incorporating it with water by means of spermaceti. Mode of inhaling the vapour. Circumstances under which it may be usefully inhaled. External uses of ether.

Spirit of Sulphuric Ether. A mixture of ether and alcohol—officinal—seldom used.

3. *Compound Spirit of Sulphuric Ether.—Spiritus Ætheris Sulphurici Compositus, U.S. Anodyne Liquor of Hoffmann*, or more briefly, *Hoffmann's Anodyne.* Mode of preparation. Odour. Mode of ascertaining its genuineness. Therapeutical uses. Dose, from 30 drops to f℥j. in a wineglassful of sweetened water or mucilage.

OPIUM.

1. Concrete juice of the capsule of *Papaver somniferum.* General character of the poppy. Varieties, *black* and *white poppy.* Where cultivated.

2. Shape and size of the mature capsules—consistence—internal structure—taste—uses—modes of preparation.

3. Seeds destitute of narcotic properties. Fixed oil obtained from them. Uses of the oil.

4. Countries in which the poppy is cultivated for the sake of opium. Mode of obtaining opium. Whence imported into the United States. Commercial varieties of opium. Smyrna opium generally used.

5. *Smyrna opium.* Shape and size of the masses—external appearance—consistence—colour of the surface—colour when broken—fracture in the soft and perfectly dry state—odour when broken—relative value.

6. *Constantinople opium.* Shape of the pieces—relative value.

7. *Egyptian opium.* Shape and size—external appearance—colour—fracture—odour—quality—relative value.

8. Properties of opium—odour—taste—effect of long chewing—colour—mode of pulverizing—character of the powder—inflammability—relations to water and alcohol—signs of inferiority.

9. Chemical constitution of opium. Most interesting ingredient, *morphia.* State in which this exists in opium.

10. *Narcotina*, another ingredient. Its form—sensible properties—effects of heat—relations to water, alcohol, and ether—influence of its combination with acids—effects on the system—mode of separating it from opium or morphia.

11. Besides these principles, opium contains at least one other alkaline substance named *codeia*, gum, extractive, resin, caoutchouc, a volatile principle, &c.

12. Effects of opium on the system. Duration of its primary action. Secondary effects. Influence over the secretions, the peristaltic motion, pain, spasm, and other forms of nervous irritation. Effects in very large doses. Poisonous effects. Treatment of these. Peculiar effects of opium on certain constitutions. Therapeutical indications which it is capable of answering. Contra-indications. Circumstances modifying the dose. Cases in which the medicine is best given by the rectum, or applied to the skin.

13. Given in substance, tincture, or in the form of some preparation of morphia. When in substance, usually in the form of pill. Mode of preparing the pill. Medium dose, 1 grain.

14. *Tincture of Opium.—Tinctura Opii, U.S.—Laudanum. Thebaic tincture.* Advantages of this form. Mode of preparation. Dose, equivalent to one grain of opium, 13 minims or 25 drops. Caution in relation to laudanum long kept. Mode of applying it externally.

15. *Camphorated Tincture of Opium.—Tinctura Opii Camphorata, U.S.—Paregoric elixir.*

19. Ingredients. Sensible properties. Two grains of opium in every fluidounce. Advantages of this preparation. Dose, for the purposes for which it is ordinarily given, f℥j.

20. *Acetated Tincture of Opium.—Tinctura Opii Acetata, U. S.* Substitute for *Acetum opii* or *black drop.* Mode of preparation. Dose, equivalent to one grain of opium, 10 minims or 20 drops.

21. *Vinegar of Opium.—Acetum Opii, U.S.—Black drop.* Mode of preparation. Advantages. Dose, equivalent to one grain of opium, 7 to 10 drops.

22. *Morphia.* Mode of preparation—form—colour—taste—effects of heat—relations to water, alcohol, ether, the fixed and volatile oils, the acids, and the inorganic alkalies—tests—state of combination in which it is employed.

23. *Sulphate of Morphia.—Morphiæ Sulphas, U.S.* Mode of preparation—form—colour—solubility in water.

24. *Acetate of Morphia.—Morphiæ Acetas, U.S.* Form—solubility in water.

25. *Muriate of Morphia.—Morphiæ Marias, U.S.* Form—solubility in water.

26. Peculiar physiologieal effects of morphia and its preparations. Cases in which they are preferable to opium. Dose, one-sixth of a grain, equivalent to one grain of opium. Given in pill or solution. There is an officinal solution of the sulphate.

27. *Solution of Sulphate of Morphia.—Liquor Morphiæ Sulphatis, U.S.* Proportion of the sulphate to water, 1 gr. to f℥j. Dose, from f℥j. to f℥ij.

28 External use of the salts of morphia. Mode of application. Quantity applied.

LACTUCARIUM. *U.S.*

Inspissated milky juice of *Lactuca sativa*, or garden lettuce. Mode of collection.

1. Properties—form—colour—odour—taste—relations to water—chemical constitution.

2. Effects on the system. Practical application. Dose, 2 or 3 grains.

3.

4.

HENBANE LEAVES.—HYOSCYAMI FOLIA. *U.S.*
HENBANE SEED.—HYOSCYAMI SEMEN. *U.S.*

1. Leaves and seeds of *Hyoscyamus niger*—a biennial, herbaceous plant—indigenous in Europe. Leaves of the second year preferred.

2. Odour of the recent and of the dried leaves—taste—relations to water and alcohol. Virtues ascribed to a peculiar alkaline principle called *hyosciamia*, but uncertain.

3. Shape, size, and colour of the seeds.

4. Effects of hyoseyamus on the system. Points in which it differs from opium. Effects of overdoses. Effect on the pupil. Therapeutical applications. Dose of the leaves, 5 to 10 grains. These rarely used. The medicine is most commonly employed in the form of extract.

5. *Extract of Henbane.—Extractum Hyoscyami, U.S.* The inspissated juice. Mode of preparation—consistence—colour—odour—taste. An alcoholic extract also directed by U. S. Pharmacopœia. Dose of either, 2 or 3 grains, repeated frequently till the medicine produces some effect.

Tincture of Henbane.—Tinctura Hyoscyami, U.S. Dose, f℥j.

HOPS.—HUMULUS. *U.S.*

1. Fruit or strobiles of *Humulus Lupulus.* General character of the plant. Indigenous in Europe and North America. Mode of collecting and preparing the strobiles for market.

2. Properties of hops—form—colour—structure—texture—powder about the base of the scales—odour—taste—relations to water and alcohol.

Active ingredients, a volatile oil and a peculiar bitter principle found most abundantly in the powder about the base of the scales. The powder is called lupulin.

3. *Lupulin.—Lupulina, U.S.* Mode of collection—form—colour—odour—taste—effects of heat.

4. Effects of hops on the system. Remedial applications internal and external. Given in infusion and tincture. Dose of the infusion, made with half an ounce to a pint of water, f℥ij.—of the tincture, from f℥j. to f℥ss.

Lupulin used in substance and tincture. Dose, 6 to 12 grains, given in the form of pill —of the tincture, f℥j. to f℥ij.

CAMPHOR.—CAMPHORA. *U.S.*

1. Product of *Camphora officinarum* (*Laurus Camphora* of Linnæus)—an evergreen tree, indigenous in China and Japan. Mode of obtaining the camphor. State in which it is brought into market. Mode of refining. Form of the resulting cakes.

2. Properties of camphor—colour—translucency—texture—feel—effects of alcohol on the facility of pulverization—odour—taste—specific gravity—volatility—effects of heat—in-

from ... the ... of the ... when first imported soft - reddish brown, blackening by age - when broken, brown - fracture often soft granular, when hard ... - odour strong, narcotic, unpleasant - the best variety of opium - known by the ... of the ... .

6. Small lenticular cakes covered with poppy leaves which leave the impression of their median nerves - more surrounded by rumex - inferior to smyrna but next to it.

7. Flat cakes about 3 inches in diam: - covered by the remains of some leaf - colour reddish - bitter - odour ... strong - contains much less morphia, does cannot be distinguished on from its ... quality - a very inferior kind.

India Opium occurs in two forms 1st in large balls like ... balls, size of child's head enveloped by poppy petals - this is inferior 2nd in oval flat cakes with ... envelope, colour blackish brown; internally darker.

8. Brown ... odour, - bitter acrid taste - [illegible] irritating effect of other acid substances - brown colour, leaves a mark if drawn across paper - pulverized after drying - [illegible] (said to have been mistaken for [illegible]) - inflammable - yields [illegible] to water [illegible] - signs of inferiority are little odour & taste & too much darkness of colour.

9. Morphia combined with meconic & sulphuric acids, narcotina, [illegible], Codeia, Thebaia & other organic alkalies.

10. Narcotine, in prismatic crystals - white, inodorous, insipid - fusible by heat - insol: in cold, slightly in boiling water, & in alcohol, very soluble in ether - its salts are soluble in cold water & very bitter - at first supposed ([illegible]) to be the active principle of opium, probably inert; Dr. O'Shaughnessy attributes much efficacy to it as a substitute for quinia, but if it really possess any anti-periodic power it probably owes it to the presence of ~~[illegible]~~ morphia - separated from opium or morphia by ether, which dis-

solves only the narcotine — distinguished from morphia by its insipidity, & insolubility in ether.

11. Codeia, crystallizing, [illegible] slightly [illegible] [illegible] also [illegible] [illegible] ether, produces the effects slightly stimulant [illegible] to act on the [illegible] - [illegible] & other alkalies [illegible] not well investigated.

12. First effects of opium are those of a general stimulant; the pulse are accelerated, heat increased, imagination & flow of spirits induced — this lasts but a short time varying to the dose & the constitution ½ to 1 hour — then follows a delightful calm [illegible], when the quantity is small this may continue several hours answering the purpose of sleep to a certain extent without the loss of consciousness — (in some constitutions a very opposite state characterized by most annoying restlessness, which may be obviated by doubling the dose) — then ensues the stage of depression with feeble pulse cold damp skin & drowsiness of spirits — while opium is producing these effects, it at the same time diminishes the secretions except perspiration, allays pain spasm [illegible] effects it may produce either by acting as a sedative to the nerves, or rendering the brain insensible.
In very large doses the stage of excitement is short; the coma profound & the prostration great. In coma produced by a poisonous dose, the pulse is strong and very slow, much debility and insensibility to external impressions, & darkness of the face, this is one of the specific marks of poisoning by opium — it is difficult to rouse the patient but almost always possible within 2 or 3 hours after the poison has been taken, this distinguishes it from apoplexy. In the course of two hours the stage of debility comes on — pulse feeble thread-like — skin cool — countenance pale — respiration very slow & gasping [this specific]. If the event is to prove fatal the patient will not survive the 11th or 12th hour. Death may result from the external use of opium. Treatment

evacuate the stomach by the stomach pump if a liquid preparation has been taken, or by emetics. If solid opium, the pump need not be used, but emetics only. Emetics act with difficulty they should be assisted by rousing the patient & exciting him by forcing him to walk or in hopping, & cold water dashed on the head & shoulders. When the pulse is strong & full bleeding may relieve the brain & render the stomach more susceptible to the action of emetics - bleed however with caution for fear of the debility in the last stage. This stage of opium is to be combated by wine: whey, carb: ammon:, and nutrients - in very great insensibility the electro-magnetic shock - in very low cases, where the pulse can not be felt & respiration has ceased, artificial respiration should be persevered in until the time for the action of the medicine is over. & In some constitutions opium produces nausea & vomiting, in others head ache, delirium & watchfulness, in others itching of the skin & sometimes a papulary eruption - these effects depend sometimes on constitution sometimes on nature of disease, or constituents of the opium.

13. Indications are 1. As a stimulant in moderate doses in typhus & typhoid, sometimes in typhus, & delirium tremens [in delirium if skin be damp & tongue moist, opium is especially useful it is not however, contraindicated in other circumstances.]
2. To relieve pain, as in neuralgia, parorysms, in inflammation & spasm it has proved its efficacy, not in commencement or violent cases, nor when in brain, nor in certain chest affections where it might check the secretions [but after bleeding, in gastritis, peritonitis &c, a full dose (50 or 100 drops of L. danum or 3 grains of opium), if rejected, inject. Rule Most useful in inflam: of membranes as gastrit: perito: pneumat. &c least in inflam: of parenchyma, as pneumonia, hepatit: &c].

[In inflam: where opium is indicated it should be used on-

by where the pain is great in proportion to the vascular excitement.] 3. To allay spasm as in tetanus, in colic, & spasm of ureter, gall-duct — almost a specific. 4. To produce sleep either by its influence on the brain or by allaying pain. 5. To suppress morbid secretions by diminishing the nervous energy on which secretion depends, as in hemorrhages & all discharges as diarrhea & except through the skin. 6. To promote perspiration as an adjuvant to diaphoretics as ipecac. It may meet two or more of the above indications occurring together & may be used in all diseases where any of them occur.

14. Contraindicated by full bounding pulse, cerebral inflam: or active inflam: elsewhere, or determination to brain, or constipation or inflam: of mucous memb: whence we desire secretion as in bronchitis (early stage); & first stages of diarrh: & dysent:-

15. Dose modified by the constitution, the disease, & the indication. Thus ⅛ to ½ grain is a small dose, given frequently repeated, to allay cough, or diarrhea & to stimulate; ½ to 2 grains are a medium dose, used as an ordinary anodyne & soporific; 2 to 5 grains are a full dose, given in tetanus, colic, mania a potu, gastritis after bleeding, cancer

16. Given in enemata when the stomach is too irritable to bear it, & when the seat of the disease is near the rectum as strangury, uterine affections, nephritis &c. The same true of the endermic application & injection mutat: mutandis.

17. Pill should generally be prepared from powdered Opium, as more soluble; but when gradual action is desired, from solid.

18. Laudanum has all the virtues of Opium & acts more speedily preferred therefore when promptness is required. — ounce & a quarter to pint of dilute alcohol — 13 minims not always equiv: to a grain because all Opium not of same strength — should be brisk — by age alcohol evaporates, Opium is precipitated since may be poured out with the liquid this should be attended to — (Woman thought laudanum grounds very weak — gave it, child died.) Error to suppose laud: weakened by age. Mixed with ... is applied to denuded surfaces. Dose ♏10 to f℥j +.

19. Chium, Benz. acid āā ʒj; Ol. anisi ℥ij; Honey ʒij; Camphor ʒij; Dilute alcohol Oij.— Ung: differs in chops some vein made by the formula of the U.S. in the Copeia previous to the omission of liquorice extract to obviate its resemblance to laudanum— the camphor is precip: by water — it is given with a view to the full operation of laudanum — slight colic, nausea, diarrhea. cough after febrile symptoms not commencement of catarrhal affection. Tond: Ph: calls it tinct: camph: comp: to prevent mistakes

20. One half alcohol ½ Vinegar. Otherwise like laudanum — agrees in some cases where the prep: is nauseate — the old black uncertain.

21. Opium, Nutmeg & Saffron, digested in Vinegar, then passed several ℥ss. through a percolator, sugar added. Vinegar dissolves all the principles of opium soluble in water — it is believed to possess the anodyne, and sedative effects of opium without the tendency to produce head-ache, nausea & constipation.

Na. Ext: Officinal in some countries — not advantageous.

22. Opium is macerated in water several days & filtered, the solution contains meconate of morphia. Ammonia is added which unites with the meconic acid & precipitates the morphia, which is collected & boiled in water &c. Transparent crystals — white in powder — bitter — when heated the crystals lose their water of crystallization & with a higher heat are fused forming a yellow liquid like melted sulphur — insoluble in cold & slightly sol: in boiling water — soluble in alcohol more so in hot than in cold — insoluble in ether — soluble in the oils, in solut: of inorg: alk: & in acids — its salts are decomposed by inorg: alk: which in excess redissolve the precipitated morphia — test, any persalt of iron by producing a bluish tinge in dilute solution & a black precip: if concentrated — concentrated nitric acid will detect any salt of morphia. acid morphia in the solid state by producing a bright red changing to yellow — not used in the uncombined state in this country the sulphate is chiefly used, & the acetate

is much employed in Great Britain the muriate is principally used. Morphia contains no citric which is separable citric which dissolve the latter.

23. By saturating morphia with sulphuric acid it is unnecessary to separate the narcotine - white crystals very soluble.

24. By saturating pure morphia by acetic acid - crystals apt to form some of the acid to be not completely soluble in water this obviated by adding vinegar - dissolves clear.

25. By saturating morphia by muriatic acid - colourless, transparent acicular crystals - soluble in cold water & in boiling water.

26. Morphia possesses all the anodyne effects of opium, it is less apt to nauseate, stimulate, or affect the head, but it sometimes does so in insufficient doses - does not constipate, not so poisonous in proportion to the dose i.e. less apt to affect the brain - some can take it who cannot take opium - produces less secondary effects; hence, must be given in preference to opium when stimulation &c are to be avoided

27. A large teaspoonful equivalent to a grain of opium - opium

28. Used externally with all the effects of opium - epispastic
removed by a small blister & the morphia in fine powder
sprinkled on the denuded surface - excessive nausea, sickness, pain, gastrodynia, & vomiting - a grain or a grain & a half.

Lactucarium.

1. Cultivated as a culinary vegetable - as it comes to the table too young to have matured the narcotic principle which is most powerful when the plant is in bloom - on cutting off the stem the juice exudes is collected by a sponge & squeezed into water which is evaporated.

2. Coarse Grains - brown - odour & taste like opium - yields its virtues to water & alcohol - its active principle is not morphia nor alkaline - Lactucin [See Pereira p. 404]

3. Similar to opium, less powerful & certain - said not to constipate [For celebrated &c. see Pereira p. 404. vol II.]

4. Dose 5 to 20 grains - 20 3 have been found too small

Henbane.

1. The herb is 2 or 3 feet high, flowers yellowish with purple veins.
2. Fresh leaves are viscid, sea-green, odour unpleasant narcotic almost lost when dry- taste mucilaginous & acrid- yield virtue to water & alcohol.
3. Seeds small, size of pin-head, irregular, dirt-colour (yellowish gray)
4. Produces moderate excitement with heat of skin and frequency of pulse followed by debility, often vertigo, confusion of mind, & dilation of pupil (this is useful as a proof that the medicine is acting and to indicate the proper dose. - Less certain than Opium, does not constipate - In over doses irritates the stomach. - As a substitute for opium when it disagrees, to produce sleep, allay nervous affections &c.
5. Is evaporating the expressed juice to a proper consistence - olive-green, - odour not very disagreeable, - taste mawkish acrid - owing to the volatile quality of the extract - it may be necessary to increase the dose very much 10 to 20 grains.

Hops.

1. Vine like herbaceous, perennial - Strobiles are dried in the sun or in kilns & packed in bales called pockets.
2. The strobiles are conical consisting of scales, a seed at the base of each scale & a powder (lupuline) - light yellowish green - scales membranous, seeds, achenes, are small & round, powder consists of yellow grains - fragrant, bitter, somewhat astringent, - virtue not exclusive in the lupuline - yield virtue to water & wine - impaired by long boiling from the narcotic property resiling in a volatile oil. and contains great virtue
3. By threshing & sifting - round, cellular texture - golden yellow - aromatic - bitter - by heat their volatile oil is driven off.
4. Tonic & narcotic - scarcely stimulant but decidedly narcotic & sedative, soporific & anodyne properties as

and uncertain [illegible] in debilitated states of the system especially when the digestive organs are in fault attended with nervous affections or wakefulness - debility of drunkards - mania a potu combined with opium. Externally applied in emollient poultices to relieve pain - Soporific effect of hop-pillow doubtful - was employed by Dr Willis, with supposed benefit, in the case of George III (Mania) - should be moistened with alcohol which will extract a part of the narcotic principle & act by evaporation & at the same time prevent the rustling of the hops.

Camphor.

1. Obtained by comminuting the leaves & bark (which are impregnated with the camphor) adding water & subliming. Two kinds, one from China of a dirty white, the other from Japan somewhat finer exported from Batavia - Refined by subliming with lime - Large cakes perforated.

2. When first purified transparent, but effloresces slightly on exposure - small granules which adhere - unctuous - brittle, but not easily pulverized unless a small quantity of alcohol be added - odour peculiar - bitter, pungent, cooling - lighter than water - very volatile - at a moderate heat melts at a higher sublimes - inflammable - water dissolves 1-900th but carbonate of magnesia (3grs. to an ounce of water) will dissolve more - very soluble in alcohol ether & fixed oils - precipitated from alcoholic solution by water - with resins & fats becomes soft like volatile oils - probably an oxide of a vol: oil, its base supposed to be pure turpentine (camphine) - kept in close bottles.

3. In small doses, excites the circulation moderately & causes a sensation of heat - allays nervous disquietude & produces diaphoresis - in larger doses produces vertigo & head-ache - in still larger, nausea, vomiting, delirium, coma & even

4. Dose [illegible]

flammability—relations to water, alcohol, ether, volatile and fixed oils—reaction of water upon the tincture—effects of union with resins and fats—chemical nature—mode in which it is best kept.

3. ...Effects on the system—poisonous effects—therapeutical applications.

Medium dose, 5 to 10 grains—but the dose may vary from 1 to 20 grains. Given in the form of bolus or emulsion. Objection against the former. Modes of preparing the emul-

4. sion. Given also in solution. Camphor water (*Aqua Camphoræ, U.S.*) an officinal preparation. Mode of preparing it. Strength of the solution. Purposes for which it is used. Dose, f℥j. or f℥ij. or more. Camphor is used also in tincture. Strength of the tincture. Dose, 5 drops to f℥j.

5. ...External use of camphor. Applied in spirituous or oleaginous solution. Officinal preparations, 1. *Camphorated Tincture of Soap* (*Tinctura Saponis Camphorata, U.S.*); 2. *Camphorated Soap Liniment* (*Linimentum Saponis Camphoratum, U.S.*) commonly called *opodeldoc;* 3. *Camphor Liniment* (*Linimentum Camphoræ, U.S.*).

BELLADONNA. *U.S.*

Leaves of *Atropa Belladonna*—a perennial herb, indigenous in Europe. Whole plant narcotic. Commonly called *Deadly nightshade.*

1. ...Shape of the leaves—colour when dried—odour—taste—virtues said to reside in an alkaline principle called *atropia.*

2. ...Effects on the system. Poisonous action. Treatment of its poisonous effects. Therapeutical applications. Used in substance, infusion, or extract.

Dose of the powder, gr. j. night and morning—of the infusion, made with one scruple to ten fluidounces of water, f℥j. or f℥ij.—of the extract, or inspissated juice (*Extractum Belladonnæ, U S.*), much more employed in the United States than any other preparation, one-fourth or one-half a grain twice a day. An alcoholic extract also directed by U.S. Pharmacopœia. Reasons for beginning with a small dose. The quantity to be gradually

3. increased, if necessary, till some effects upon the system are produced. Evidences of these effects.

4. ...External use in the form of plaster (*Emplastrum Belladonnæ, U.S.*), and as an application to the eye and the os uteri.

STRAMONIUM LEAVES.—STRAMONII FOLIA. *U.S.*
STRAMONIUM ROOT.—STRAMONII RADIX. *U.S.*
STRAMONIUM SEED.—STRAMONII SEMEN. *U.S.*

Leaves, seeds and root of *Datura Stramonium*—an annual plant, growing wild in all

1. ...quarters of the world. Situations most favourable to its growth. Common names.

...Leaves. Odour in the recent state—taste.

2. ...Seeds. Shape—colour—odour—taste—relative activity—relations to water and alcohol.

3. Virtues of Stramonium ascribed to an alkaline principle called *daturia*, the existence of which, however, is doubtful.

4. ...Effects on the system. Poisonous action. Evidences of this action and mode of treatment. Therapeutical applications. Dose of the seeds, one grain—of the extract of the

5. seeds (*Extractum Stramonii Seminis, U.S.*), from one-fourth to half a grain—of the powdered leaves, 2 or 3 grains—of the officinal extract or inspissated juice of the leaves (*Extractum Stramonii Foliorum, U.S.*), one grain night and morning, gradually increased till the system is affected.

External use of stramonium. Employed in the form of an ointment (*Unguentum Stramonii, U.S.*)

BITTERSWEET.—DULCAMARA. *U.S.*

Stem and branches of *Solanum Dulcamara*, or *woody nightshade.* Character of the plant,

1. ...and places of growth.

2. ...Shape and size of the twigs—structure—nature of the surface—colour—odour—taste—relations to water.

3. ...Virtues ascribed to a peculiar alkaline principle called *solania.*

4. ...Effects on the system. Therapeutical applications. Usually given in decoction, which is officinal. Dose, f℥ij. four times a day. The extract (*Extractum Dulcamaræ, U.S.*) may be given in the dose of from 5 to 10 grains.

HEMLOCK LEAVES.—CONII FOLIA. *U.S.*
HEMLOCK SEED.—CONII SEMEN. *U.S.*

Leaves and seeds of *Conium maculatum*—a biennial, umbelliferous plant, indigenous in Europe, and naturalized in this country. Sometimes called *cicuta*, but improperly. The

whole plant narcotic. Most so in warm latitudes. Mode of collecting and preserving the leaves.

Properties of the leaves—colour—colour of the powder—odour—taste—relations to water, alcohol, and ether. Appearance of the seeds.

Active principle, probably a peculiar volatile alkali called *conia*.

Effects on the system. Poisonous properties. Therapeutical applications. Dose of the powdered leaves, 3 or 4 grains—of the extract or inspissated juice of the leaves (*Extractum Conii, U. S.*), 3 grains, repeated 2 or 3 times a day. The dose to be gradually increased till some effect on the system is produced. Evidences of such effect. Caution in relation to the use of different parcels of the medicine. An alcoholic extract also officinal.

death. In typhoid & typhus with nervous [illegible] not connected with inflammation of the brain – acts in inflammatory fevers usually combined with ipecacuanha. – in dysmenorrh; puerperal convulsions, and mania a potu as adjuvant to opium – in nervous disorders accompanying any acute disease, in doses as small as 1, 2, or 3 grs. – applied locally, snuffed up the nostrils in coryza, & pick-headache – its vapour inhaled into the lungs in asthma & common colds a small piece may be put into a teapot with a little warm water & its vapour inhaled through the spout. [In fevers valuable by causing determination to surface & diaphoresis, hence combined with ipecac.] A scruple or half a drachm in a poultice applied to perineum, allays chordee depending on gonorrhea. [Camphor bags possess no prophylactic properties – Pereira.]

4. Bolus most readily soluble & apt to come in contact with a few points only of the stomach – emulsion with almonds, gum, & sugar. Camphor water ℞ Camphr ʒij; Alcohol ♏xl; Carb: Magnesiæ ʒj; water ℥ij – Rub the camphor with the alcohol, then with the carbonate & add the water gradually; filter – contains between 30 & 40 grains to the ounce – Tincture, two ounces to a pint of Rectif: spirit

5. Anodyne in rheumatism, gout, sprains, bruises &c (tinct: applied warm). The camphorated tincture of soap & the camphorated soap liniment are similar in being made of camphor, soap & oil of rosemary dissolved in alcohol; but for the liniment an animal soap is used which causes it to become solid, while for the tincture a vegetable soap is employed, hence it remains liquid. Camphor liniment is camphor dissolved in pure oil.

Belladonna.

1. Leaves ovate acute – dull green – faint narcotic odour – sweet & somewhat acrid taste –
2. [illegible] decidedly stimulating producing head-ache – its first effect in moderate doses is dryness of the throat

slight vertigo, impaired vision. In somewhat larger doses, buzzing in ears, determination to brain, thirst, hot dry skin. In still larger doses, dilates pupil, produces great vertigo, loss of vision & increase of the other symptoms, & delirium. Besides its effects on the brain it produces inflam: of stomach. Much used in Germany. Poisoning treated as in cases from opium. Decidedly most useful in ~~rheumatic affec~~ neuralgic affections either idiopathic or symptomatic without much excitement. In hooping cough it is sometimes very useful acting like a charm. In Germany by the homoeopathists as prophylactic against scarlatina; this to be received with much caution.

3. The extract is variable in strength, begin therefore with small doses & increase until dryness of the throat is produced; this will be an evidence of the action of the remedy.

4. Externally in gout & rheumatism – to dilate the pupil in some surgical operations on the eye, & for examining its internal condition – to dilate os uteri – an application to fissures of the anus.

Stramonium.

1. [illegible] on [illegible] Jamestown Weed. [illegible]

2. When fresh [illegible] bitter, nauseous [illegible] odour & nauseous [illegible].

3. Seeds dark, [illegible] kidney-shaped [illegible] bitter [illegible] odourless [illegible]

4. Like belladonna [illegible] vertigo, delirium, disturbed vision [illegible] poisoning [illegible] from opium.

5. [illegible]

CLASS VI.

ARTERIAL SEDATIVES.

General Observations.

Sedative medicines are those which, by their immediate influence, produce a reduction of the vital actions. Some of these are directed more especially to the circulatory system, reducing the action of the heart and arteries, without any immediate influence upon the nervous power. These are called *arterial sedatives.* Others reduce at the same time arterial and nervous power; and these, for the sake of convenience, we call *nervous sedatives.*

1. . . The arterial sedatives, though in their primary action confined to the circulatory system, undoubtedly affect the nervous system also; but only in a secondary manner. The two systems are so closely connected by sympathy, that any great disturbance of the one seldom exists without inducing disorder in the other.

Though sedative in their general influence, these medicines may be stimulant in relation to particular functions or organs, and in large quantities often act as local irritants.

An obvious indication for the use of the arterial sedatives is afforded by increased vascular action, resulting from an increased display of the vital energies. Hence their use in all inflammatory diseases attended with fever, and not complicated with typhous tendencies; and in all fevers in which the grade of action is above the healthy standard.

Refrigerant medicines belong to this class. They operate in general by reducing the excited action either of the heart or of the capillaries, from which the increased heat arises.

ANTIMONY.—ANTIMONIUM.

Even in quantities too small to produce obvious effects, the antimonials are not without influence on the system. They occasion some modification of the vital actions, which, though so slight as to escape notice in health, is yet important in some cases of disease. Medicines which act in this way are called *alteratives.*

In larger quantities, given so as to operate upon the system, without producing nausea, they depress the movement of the heart and other parts concerned in the circulation, as indicated by a slower and weaker pulse, and a less vigorous impulse of the heart when examined by a stethoscope. At the same time the surface becomes cooler and paler, and

1. . . respiration less frequent. Sometimes, by proper management in the increase of the dose, and in the regulation of the diet, this depressing influence may be exhibited in a powerful degree without any especial action on the stomach.

Usually, from doses calculated to produce a decided sedative impression on the circulation, nausea or sickness of stomach also results, which, by its own depressing agency upon the circulatory function, very much increases the sedative influence of the antimonial. This combined action is sometimes desirable when great relaxation is to be produced; but the local impression on the stomach should be avoided in cases of inflammation or great irritation of that viscus.

In still larger doses, the antimonials usually vomit. Of this effect, more will be said under the head of emetics.

These preparations are apt also to irritate the bowels, and to occasion purging, especially if not thrown off from the stomach by vomiting. Very large doses sometimes occasion

2. . . violent vomiting and purging, with great and dangerous prostration.

While operating as general sedatives to the circulatory forces, the antimonials appear to stimulate the secretory functions, being directed to one or another of these functions,

3. . . according to the circumstances under which they are given, or the mode of administration.

The effects of antimonials upon the heart and arteries, and upon the secretions, probably depend upon their entrance into the blood-vessels by means of absorption. On the stomach they probably act by an immediate irritation, though they appear to have a peculiar tendency to this organ, as, even when introduced into the system by other routes, they are said to act as emetics.

Applied in large quantity to any part of the body, they produce local irritation or inflammation. Thus, tartar emetic, when applied to the skin, gives rise to a pustular eruption, and on a surface unprotected by the cuticle is capable of acting as a caustic.

Metallic antimony, administered in very fine powder, is capable of producing all the

general effects of its preparations; but its activity probably depends upon chemical changes which it undergoes in the stomach, and its operation is too uncertain to be depended on.

The preparations which have at different times been employed are very numerous. It is sufficient to notice three—viz. 1. *tartar emetic*, 2. the *precipitated sulphuret*, and 3. the *antimonial powder*.

TARTRATE OF ANTIMONY AND POTASSA.—ANTIMONII ET POTASSÆ TARTRAS. *U.S.*—*Tartar emetic. Tartarized antimony.* Chemical nature. Mode of preparation. Reason why it should always be crystallized.

Shape of the crystals—colour—effect of exposure—odour—taste—relations to water and alcohol—effects of time upon the aqueous solution—incompatibles.

The best of the antimonials. In small doses, used as an alterative in chronic cutaneous diseases, scrofulous affections, chronic pulmonary complaints, &c.; in somewhat larger doses, as a refrigerant or arterial sedative in febrile and inflammatory complaints, particularly bronchitis and pneumonia, and in hemorrhages. Employment of very large doses in pulmonary inflammations. Acts in this way doubly, 1. as a sedative, 2. by revulsion to the stomach and bowels. Dangers of this mode of using tartar emetic. Poisonous effects. Resemblance to malignant cholera. Treatment.

Dose of tartar emetic as an alterative, from one thirty-second to one-sixteenth of a grain, dissolved in a large proportion of water, and repeated so that from one-fourth to one-half a grain may be taken daily;—as a sedative, from one-twelfth to one-sixth of a grain or more.

Antimonial Wine.—*Vinum Antimonii, U.S.* Solution of tartar emetic in wine in the proportion of 2 grains to f℥j. Advantages of this preparation, and of wine as a solvent. Caution necessary in the choice of the wine. Disadvantages of the inferior varieties. This preparation should be used only in cases requiring small doses of the antimonial.

PRECIPITATED SULPHURET OF ANTIMONY.—ANTIMONII SULPHURETUM PRÆCIPITATUM. *U.S.* Mode of preparation. Mode of preparing *Kermes' mineral* and *golden sulphur of antimony*. Difference between these and the officinal precipitated sulphuret. Colour of the three. Relations to water and alcohol.

Operation upon the system. Therapeutical applications. Dose as an alterative, 1 or 2 grains—as an emeto-cathartic, 5 to 20 grains.

ANTIMONIAL POWDER.—PULVIS ANTIMONIALIS. An imitation of *James's powder*. Mode of preparation. Chemical nature. Colour—taste—smell—insolubility in water. Uncertainty of medicinal effect. Therapeutical applications. Dose, 3 to 8 grains.

SALINE SUBSTANCES.

Almost all the *neutral alkaline salts*, and those in which the acid predominates, are sedative in their influence on the circulation. Usually called refrigerants. They produce this effect independently of their purgative action or influence upon the secretions. But they are chiefly used in reference to these latter effects, and only incidentally as refrigerants or sedatives. Therefore more properly treated of under other heads. One of them only so prominently sedative as to require consideration here.

NITRATE OF POTASSA.—POTASSÆ NITRAS. *U.S.*—*Nitre. Saltpetre.* Whence imported. Mode in which prepared. Artificial nitre beds. State as imported. Mode of refining.

Shape of crystals—colour—odour—taste—solubility in water—insolubility in alcohol—absence of water of crystallization—water mechanically present—effects of heat.

In moderate doses repeated frequently, lessens the force and frequency of the pulse, and diminishes animal heat. Suggestion as to its modus operandi. Stimulates the secretory functions, particularly that of the kidneys—in some measure also that of the skin. Diminishes the energy of the stomach, and causes indigestion. In large doses, it often occasions purging. In very large quantities, poisonous. Effects as a poison. Treatment of its poisonous effects. Given in inflammatory diseases, in which the action is above the standard of health, and in which inflammation of the alimentary mucous membrane is absent. Particular applications. Dose, 5 to 10 grains every hour or two hours. Given in powder or solution.

Often combined with tartar emetic, in the proportion of 5 or 10 grains of nitre to one-twelfth or one-sixth of a grain of the antimonial, in solution. Often also with calomel in addition. Composition of the *nitrous powders*.

VEGETABLE ACIDS.

Most of these are refrigerant or sedative to the circulation. Useful, when properly diluted, as drinks in febrile complaints. Too largely given, diminish the vital forces, occasion indigestion, and cause emaciation. Those chiefly used are the citric and acetic acids, in the form of lemonjuice or vinegar. Former usually preferred.

Tartar Emetic.

1. A double salt consisting of 3 eq. Water, 1 eq. tart. potash and 1 eq. ditart. Antim. Prepared by saturating the excess 1/2 of acid in bitart. potass by sesquiox. of antim. obtained from the oxychloride – filtering, evaporating, & crystallizing to avoid arsenic & other impurities.
2. Octohedral – white or transparent – become opaque by exposure – inodorous – taste styptic metallic – very soluble in water especially boiling, insol. in alcohol – aqueous solution decomposed by age, a vegetable growth being formed as in solutions of tartaric acid & most tartrates – incompatibles are the mineral acids & their carbonate, alkalies their sulphurets and carbonates, alkaline earths, astring. vegetables.
3. Contraindicated in inflam. of stomach
4. Requires great attention & experience, and if tendency to sinking or inflam. of stomach exist it will do harm. The means, the lancet, local depletion, blisters, & calomel will obtain the same results without the hazard. & they should therefore be preferred.
5. Vomiting, hypercathasis, convulsions, epigastric pain & delirium. Treatment: Mucilaginous drinks, green tea, tannin, yellow bark, nut-galls, opiums, – Afterwards wine whey, carb. ammon. & external stim. to obviate its effects.
6. Some apothecaries use 4 grs. to the ℈ℨ.
7. Convenient form for small doses; wine as a solvent retards for a long time the decomposition. White wines (Sherry) best, as red being astringent decompose it. Inferior wines also contain matters which decompose it.
8. Large doses too stimulating – suitable for children as it differs little in taste or appearance from wine.

Precipitated Sulphuret of Antimony.

9. The crude sulphuret is boiled in a solution of potassa; filtered & allowed to cool, when Kermes' mineral is precipitated; if the mother liquor be now filtered & sulphuric acid

added, the golden sulphuret of Antimony is precipitated. If the acid be added before cooling, the officinal Precipitated sulphuret is produced. Kermes mineral consists of 2 Eq. sesquisulphuret antim: 1 Eq. sesquiox. & some potassa combined with the sesquioxide; the golden sulphuret is the persulphuret of Antim. (1 Eq. ant. 2½ sulph.); the officinal sulphuret, (or sulphuret ½) is a mixture of sesquisulphuret & sesquioxide. The first is reddish, the second orange red, and the third intermediate – The officinal sulphuret is insol. in water & alcohol, sol. in solution of potassa, odourless, almost tasteless powder.

10. [Efficacy depends on ~~sulphuret~~ sesquioxide, which is variable in quantity] & on the presence of acid in stomach which is not constant; hence it cannot be much relied upon – [in small dose alterat. expect. & diaph; in larger doses causes nausea, vomiting & purging like tart. emet.] – Little used – in scrofula, rheumatism & syphilis. Antidotes as in Tart. Emetic.

Antimonial Powder. (Pulvis Antimonii Comp. L. Ph.)

11. Omitted in U.S.P. – Succedaneum for James's Fever Powder. Prepared by subjecting horn or bone shavings with sulphuret of antimony to a red. heat – a white, gritty, tasteless, odourless powder is produced consisting of sesquioxide of antimony, antimonious acid, & salts of lime – owes its activity to the sesquioxide, which is very variable in quantity as too much heat in the preparation of the powder converts it into antimonious acid which is inert, hence extremely uncertain in its effects. – Used as a sudorific in fevers & rheumatism, 3 or 4 grains every 3 or 4 hours until diaphoresis, emesis, or diuresis is produced. [Frequently combined with opium, or calomel or both.]

[Pereira recommends omitting "the use of both antimonial and James's powder, and substituting for them some antimonial of known, & uniform activity, as emetic tartar"; thus: "a mixture of one grain of tart: emet: with sixteen grains of sulphate of potash may be employed in doses of from two to four grains" Vol. I. pp. 554 & 565

Nitrate of Potassa.

1. From Hindostan. Procured by lixiviation & crystallization from earth deposited by the Ganges whose waters contain much animal matter, ~~the nitrogen of which combines with atmospheric oxygen, & potash to form crude nitre, the combination being promoted by the heat of the climate. Found~~ the ammonia of which is probably oxidized forming nitric acid & water; the nitric acid then unites with potassa to constitute crude nitre. (Animal matter is necessary only to furnish ammonia. To effect the union of nitrogen with oxygen the simultaneous union of hydrogen with oxygen is necessary). Nitre is also found abundantly in caves as the Mammoth Cave Kentucky, & caves in Ceylon. [Artificial nitre beds are formed of decomposing animal & vegetable matter mixed with ashes, lime or marl, watered occasionally with urine.] Imported crude containing common salt, & sulphates. Refined by boiling the solution, straining & crystalliging.
2. Crystals six-sided — striated, whitish transparent — inodorous — saline sharp cooling slightly bitter taste — soluble in 3 pts. water — insol. in alcohol — do not effloresce, since they contain no water of crystallization, but precipitate from water mechanically held, and after the water is evaporated are fusible by heat.
3. Some attribute its cooling & sedative action to the mechanical effects of cold produced by its solution in the stomach; this not true, for it is equally efficacious when given in solution. I think it acts directly on the heart after being absorbed.
4. Local irritant to the alimentary mucous membrane, but when used for a long time it impairs the digestive functions independently of its local action, by lessening the secretion of the gastric juice. ~~May be safely given in large doses if sufficiently diluted.~~
5. Vomiting, purging, violent pains (from inflam. of alim. canal) [also giddiness, convulsions & other nervous symptoms]. Has been mistaken for Glauber's salt. Treatment. [Remove the poison & use tepid emollient drinks. Inflam. symptoms to be met by usual treatment.]

demulcents, anodyne enemata, leeches to stomach, & antiphlog.

6. In febrile diseases when the pulse is strong & full & the fever high, a good adjuvant to the lancet,- catarrhal fever, pneumonia, pleurisy, early stage of bilious fevers. Most useful in inflam. rheumatism, in which the French use from ʒvj - xvj, in a pint of barley water in 24 hours.

7. Best used in solution. May be safely given in large doses if sufficiently diluted.

8. Nitrous powders. Nitre ʒj; Tart. Emet. gr. ss.; Calomel grs. iv-vj. Divide into eight powders; give one every two hours in bilious fever. — The following solution is more convenient. Nitre ʒj-ij; Tart. Emet. grs. j-ij; Water ƒ ʒvj. Tablespoonful every two hours.

Vegetable Acids.

1. Reducing its consistence in the form of syrup- or by freezing to separate it from mucilage &c.

2. Prepared by adding chalk to lemon-juice; citrate of lime is precipitated this is washed. Then it is thrown into a dilute solution of sulphuric acid; sulphate of lime is precipitated and citric acid ~~again in solution~~ held in solution, whence crystals are obtained by evaporation.- Crystals are short rhomboidal prisms, colourless, odourless, transparent, very sour.

3. To a strong solution add carb. potass. [taking care that the acid of the solution be in excess] if tartaric acid be present a white precipitate (bicarb. potass.) will be observed; if not effervescence merely without a precipitate.

Tartaric Acid- is refrigerant but it has not the other properties of Citric acid.

Citric acid is contained also in limes, sour oranges, and tamarinds, which are therefore equivalent in effect to lemonjuice.

1. . . . Modes of preserving lemonjuice. Citric acid in solution may be advantageously substituted.

2. . . *Citric Acid.—Acidum Citricum, U.S.* Mode of preparation. Form of crystals. A solution made with ℥j. to Oj. of water, may be used for lemonjuice. Oil of lemons is a good addition, in the proportion of 4 drops to the pint. Mode of mixing. For lemonade, ℈j. of acid may be dissolved in Oj. of water.

Citric acid is best purchased in crystals. Adulterated with tartaric acid. Mode of de-

3. . . . tecting the latter.

Used as a refrigerant, also as a preventive and cure of scurvy.

CLASS VII.

NERVOUS SEDATIVES.

General Observations.

Medicines which, in their primary operation, reduce at the same time the nervous power, and the force of the circulation. All of them obviously affect the functions which belong especially to the brain, and rank with those medicines usually called narcotic. It is doubtful whether their influence on the heart is exerted immediately, or through the intervention of the nerves. They are applicable therapeutically to complaints attended with nervous disorder and unhealthy excitement of the heart and arteries.

FOXGLOVE.—DIGITALIS. *U.S.*

Leaves of *Digitalis purpurea*—a biennial herbaceous plant, indigenous in Europe, and cultivated in this country. Said to be strongest when it grows in sunny exposures.

Shape of the leaves—size—character of the surface—colour—separation of the footstalks—mode of drying—appearance as prepared by the Shakers—means of judging of the quality—odour in the recent and dried state—taste—colour of the powder—relations to water and alcohol.

Effects upon the system. Influence on the pulse. Direction to the kidneys. Symptoms produced by an overdose. Treatment of its poisonous effects. Permanence of its influence. Disposition to act with accumulated force. Practical inferences. Not to be relied on as a substitute for the lancet. Reason of this. Useful as an adjuvant. Particular therapeutical applications.

Given in substance, infusion, or tincture—most certain in substance. Dose of the powder in chronic cases, 1 grain night and morning—in acute cases, one-half or one-fourth of a grain every 3 or 4 hours. Administered in pill. The *infusion* officinal. Made in the proportion of ʒj. to Oss. of boiling water, with fʒj. of the tincture of cinnamon. Dose, fʒss. Dose of the tincture, 10 drops, about equivalent to a grain of the leaves. Cautions in relation to the increase of the dose, and perseverance with the medicine.

TOBACCO.—TABACUM. *U.S.*

Leaves of *Nicotiana Tabacum*—an annual plant—probably a native of tropical America—cultivated in all quarters of the world.

Sensible properties—relations to water and alcohol—effects of long boiling.

Activity thought to reside chiefly in a volatile alkaline principle called *nicotia*. Form, colour, odour, and taste of this principle, and effects upon the system. Another odorous principle. *Empyreumatic oil*, resulting from the destructive distillation of tobacco. Form, colour, taste, and odour of this oil, and its effects on the system.

General effects of tobacco as a nervous sedative. Poisonous action. More dangerous when given by the rectum than when swallowed. Reason of this. Treatment of its poisonous effects. Diuretic, nauseating, and emetic properties.

Seldom given by the stomach. Cases in which it is used as an enema. Given in this way in the form of infusion made with ʒj. to Oj. of water, of which one-half is to be given at once, and the other half in half an hour if necessary. Cases in which tobacco may be used by smoking it. External application in the form of cataplasm, or of cerate made with snuff. Use of tobacco ointment.

HYDROCYANIC ACID.—ACIDUM HYDROCYANICUM. *U.S.*

Also called *cyanohydric acid* and *prussic acid*. Plants in which it exists. State in which it is obtained from them, and mode of obtaining it. *Cherry laurel water*. Uncertain, and little used here. *Oil of bitter almonds* may be substituted for the diluted hydrocyanic acid. Advantages of the oil.

The concentrated acid is too powerful for use. Also very susceptible of decomposition. The officinal acid is prepared in a diluted state. Mode of preparing it.

Form of the officinal hydrocyanic acid—colour—taste—odour—effects of exposure—mode in which it may be best kept.

Effects on the system. Poisonous effects. Remedial measures. Therapeutical appli-

NARCOTICS SEDATIVES

Digitalis.

1. Long oval – large – velvety – wrinkled – dull green – veined beneath – footstalks should be discarded as they possess less activity than the leaf – dried in a dark place in a drying stove & afterwards excluded from light – Shakers press it, so as to be made up into small parcels, or cakes, which become mouldy internally – best to keep the leaves unpressed – the imported is probably best – its odour is a test of goodness – narcotic odour which becomes fainter by drying – taste decidedly bitter – powder greenish. Yields its virtues to water & alcohol – active principle not known – the seeds are recognized by some Pharmacopoias.

2. In official doses, it at first produces no sensible effects – continued for two or three days it lessens the frequency of the pulse and produces intermittence of its beats – continued longer, or taken in larger doses it brings on an appearance of heaviness & drowsiness – still continued it reduces the force & frequency of the pulse very much. Posture modifies its effects remarkably; for the medicine acts by debilitating the heart, & consequently the circulation is liable to be deranged by the same causes which would affect it, were the heart weakened by any other means; thus ~~after~~ during the use of digitalis motion will cause the pulse to be accelerated instead of reduced – variable in its effects, in some persons producing only narcotism in others only intermittent pulse – it is one of the most stimulating diuretics, acting probably by directly stimulating the urinary organs – Its bitter principle very probably, I think acts as a tonic, which effect I believe I have observed. In poisonous quantities its symptoms are stupor pale cold skin, & low pulse [vomiting, purging, faintness, cold sweats]. Treatment: warm drinks to vomit, then support the system by laudanum, brandy, carb: ammon: keep patient accumbent to guard against syncope]. – When digitalis begins to act either on the heart or kidneys, its action will continue several days, hence a caution to suspend it, or diminish the dose – Its ef-

fect is sometimes cumulative; it may not act at first; but after a time may act suddenly with great force; this may result from absorption not having taken place at first. In poisoning from this property, an emetic is not required, but only stimulants—; the inference from this is to discontinue its use after a week or two whether it has acted or not.
Not a substitute for the lancet because its influence is not felt early enough, nor does it alter the condition of the blood. Useful as an adjuvant, particularly where depletion has been pushed, or the strength will not admit it, as in some cases of scarlatina, hemoptysis, & phthisis.

3. Most useful, perhaps, in diseases of the heart, to arrest nervous palpitations which may lead to hypertrophy—combined with tonics may be used cautiously in fevers—in heart affections it may be combined with emetic tartar or nitre. In whatever disease employed, or whatever preparation be used increase cautiously
4. Cautions. Discontinue after a week or two whether it has begun to act or not—at any rate diminish the dose. If increase of dose be thought necessary use extreme caution.

Tobacco.

1. Brownish colour—peculiar narcotic odour—nauseous & bitter. —yields its properties to water & alcohol—long boiling dissipates the volatile active principles an alkali, & oil.
2. Nicotin is a volatile liquid alkali—colourless—disagreeable odour acrid nauseous taste—a powerful narcotic poison.
3. A solid volatile oil, called by Gmelin Tobacco-camphor.
4. Empyr: oil, a dense liquid—odour like that of pipes—fatal in very small quantities.
5. In moderate doses it produces a sedative soothing effect—[diuretic by suppressing not producing wakefulness as common—in larger doses, nausea, vomiting, purging, languor, trembling, sinking sensations]—in poisonous quantities extreme weakness and depression, feeble pulse, cold sweats, torpor, paralysis & death—more dangerous when administered in enema, because it is not

ejected as from the stomach by vomiting – Treatment if free vomiting has not occurred, evacuate the stomach – then give brandy, ammonia &c [coffee, vegetable acids as antinarcotics] artificial respiration, when reaction is established purge.

Tobacco acts on the brain & through it on the heart – is absorbed & has poisoned when externally applied as in tinea capitis.

6. Not given by the stomach because it nauseates – Enema, in ileus strangulated hernia, obstinate constipation – sometimes used as suppository – Smoked in spasmodic asthma; & spasmodic croup. (Chapman). – Applied externally for spasm of the rima glottidis (an excellent application Wood) – also in croup (Wood, Chapman, Jackson) but cautiously, and in colica pictonum, rheumatism of joints.

Ointment in porrigo &c, indolent tumours & ulcers.

Hydrocyanic Acid.

1. The kernels & leaves of the tribe Amygdaleæ, the pips of Pomaceæ &c. as bitter almonds & peach kernels, leaves of cherry-laurel, wild orange & peach, bark of wild-cherry &c – the acid exists in the volatile oil of bitter almonds &c; this oil does not exist as such in the kernel, but is produced by the mutual reaction of amygdalin & emulsin (which are found in the kernels) & water. The emulsin acts as a ferment – at the heat of boiling water the emulsin is coagulated & does not act hence cold water is employed for infusions.

2. The oil ~~when concentrated is too powerful for use, & a smelling it produces vertigo &c~~ is variable in strength but keeps well. [It is a most powerful agent; producing dangerous symptoms in small quantities, four times as powerful as the officinal (Lond. & U.S.P.) acid. dose from a quarter of a drop to two drops in emulsion.]

3. Air & light hasten but are not essential to the decomposition.

4. Distilling ferrocyanuret of potassium (prussiate of potash), sulphuric acid & water; sulphate of potash & bi-ferrocyanuret of potassium are left in the retort, & hydrocyanic acid distilled over, which is diluted so that 100 grs. of it may saturate 12.7 grs. of nitrate of silver.

5. A liquid – colourless – taste cooling then slightly acrid – odour

but not corrosby.

said to resemble that of the oil of bitter almonds — decomposed by light & air, and should therefore be preserved in close black bottles.

6. Acts immediately on the nervous system, first producing paralysis of the muscles, which reaches the lungs & heart. In smaller quantities it produces vertigo, faintness & head-ache. [Local action is benumbing; hence probably its power of alleviating gastrodynia.]. Effects of poisoning are intensely bitter taste — faintness — convulsions — spasmodic breathing — sinking pulse, — or sudden death after two or three deep inspirations. Treatment — if quick enough give an emetic (mustard) give ammonia (if swallowing is impossible ~~xxx~~ let it be inhaled into the lungs — Chlorine by stomach or inhalation. Cold affusion over head & shoulders — artificial respiration.

7. To allay nervous irritation, hooping cough, catarrhal affections (not inflam.) & epilepsy, neuralgic & spasmodic affections of the stomach, gastrodynia, vomiting, dyspepsia —

8. Cyanuret of Potassium. Prepared from the ferro-cyanuret by exposing to a red heat, dissolving, filtering, & evaporating the solution to dryness

9. Or the acids of the stomach.

* Amygdalin triturated with sweet almond emulsion has been proposed as a convenient form; the emulsin of the almond acts by catalysis.

The U. S. P. has adopted from the London Ph., the following method of preparing the acid for immediate use:

Mix Muriatic acid grs. 41, with distilled water f ℥j, & add cyanuret of silver grs. 50½ — Shake the whole in a well stopped vial. When the insoluble matter (chloride of silver) has subsided pour off the clear liquor for use. [This is of the same strength as the officinal acid.]

[Hydrocyanic acid prepared by either process of the U. S. P. contains two per cent of pure anhydrous acid.] U. S. P. p. 60

Dr. Wood prefers the oil of bitter almonds, or the infusion of cherry-

bark

cations. Dose of the officinal hydrocyanic acid, to begin with, two drops every 2 or 3 hours, to be gradually increased if necessary till evidence of its influence is afforded.

Of the strong acid not more than one-twelfth of a drop should be taken at once.

8 . . . . *Cyanuret of Potassium.—Potassii Cyanuretum, U.S.* Mode of preparation. Becomes hydrocyanate of potassa when dissolved. This is decomposed by any acid, even the carbonic acid of the air. Hydrocyanic acid is thus liberated. As the cyanuret when dry keeps well, it is a good substitute for the officinal acid. Given in solution with a little vinegar. Dose, one-fourth of a grain gradually increased to a grain.

9. . . .

*

The dose of the oil of bitter almonds is from a quarter of a drop to a drop and a half.

CLASS VIII.

EMETICS.

General Observations.

Medicines capable of producing vomiting, in certain doses, and as an ordinary result, in the healthy state of the stomach. No immediate effects are produced. In 10, 15, or 20 minutes, nausea comes on, with paleness, a cool, moist, and relaxed skin, and a feeble, frequent, irregular pulse. These symptoms increase till vomiting results. During vomiting, the face is flushed, a sense of fulness in the temples is experienced, and the pulse becomes full and slow. After vomiting, the skin is moist, the pulse soft and feeble, the patient languid and disposed to sleep.

Mechanism of vomiting. Explanation of the mode in which it is produced by emetics. Intervention of the brain necessary. Proofs of this.

Emetics often act on the stomach, when applied to the rectum or the skin.

Said to differ from most other medicines in not losing their power upon repetition. Observations going to show that their difference from other medicines in this respect is only apparent.

The susceptibility to the action of emetics is different in different individuals, and in different diseases. Complaints in which this susceptibility is least, and those in which it is greatest.

Therapeutical effects of emetics included under the following heads: 1. Evacuation of the stomach; 2. Mechanical pressure on the liver and other abdominal viscera; 3. Reduction of arterial action during the period of nausea; 4. Muscular relaxation; 5. Promotion of the secretory functions of the skin, lungs, and liver; 6. Powerful agitation of the whole frame; 7. Revulsion to the stomach; 8. Purgation, when the medicine is given in considerable doses, but insufficient to vomit; 9. Depletion, directly by the promotion of secretion, and indirectly by the removal of the food; 10. Irritation of the stomach. Observations and illustrations under each of these heads.

Two or more indications for the use of emetics are often presented in the same disease.

Circumstances contra-indicating the use of emetics, 1. acute inflammation of the stomach, bowels, or neighbouring viscera, 2. strong sanguineous determination to the brain, and 3. pregnancy in its advanced stages. Caution in cases of hernia, and in the use of acrid or corrosive emetics, in large doses, in insensible states of the stomach.

Usually administered diffused in water, and in doses repeated every 15, 20, or 30 minutes, till the emetic effect is produced.

If the object be merely to evacuate the stomach, warm diluent drinks should be given freely, as warm water or chamomile tea; if to produce a powerful impression on the system, with much retching and nausea, little or no drink should be allowed.

Excessive vomiting relieved by the free use of warm demulcent drinks, followed by laudanum or morphia, a spiced plaster or sinapism over the epigastrium; and if these fail, by an anodyne enema consisting of 60 drops of laudanum with f℥ij. of a solution of starch.

1. *Vegetable Emetics.*

IPECACUANHA.

Root of *Cephaelis Ipecacuanha*—a small shrub growing in Brazil and other parts of South America.

Character of the root—shape—size—structure—nature of the surface—consistence of the cortical portion—its translucency, fracture, and relative virtues—relative size of the ligneous portion—propriety of rejecting the smooth portions of stem attached to the root—colour of the root—varieties founded on the colour, *brown*, *gray*, and *red*—all from the same plant—no essential difference in them.

Colour of the powder—odour—peculiar effect in some individuals—taste—relations to water and alcohol—effects of decoction.

Active ingredient, *emetia*, an alkaline principle. Relation to tannin. Inference as to the incompatibility of astringents with ipecacuanha.

Ipecacuanha injured by long exposure to light.

Emetics.

Effects on the system. Character as an emetic. Therapeutical applications.

Dose as an emetic, from 15 to 30 grains—as a nauseating medicine, 2 or 3 grains—as a diaphoretic or expectorant, from one-half a grain to 2 grains—as an alterative, from one-fourth to one half a grain, 2, 3, or 4 times a day.

Wine of Ipecacuanha—Vinum Ipecacuanhæ, U.S.—may be given as an emetic in the dose of f℥j. to an adult, and f℥j. to an infant, though seldom used for this purpose. More commonly employed in smaller doses as a diaphoretic and expectorant.

Syrup of Ipecacuanha—Syrupus Ipecacuanhæ, U.S., given in half the dose of the wine.

GILLENIA. *U.S.*

Root of *Gillenia trifoliata*—an indigenous, herbaceous, perennial plant, called *Indian physic*, and sometimes *American ipecacuanha*. The root of the *G. stipulacea* has the same properties. The former grows in the Atlantic States, the latter in those of the West.

Shape of the root—size—nature of the surface—colour—difference between the cortical and ligneous part—taste—odour—colour of the powder—relations to water and alcohol.

Character as an emetic. Therapeutical applications. Dose, from 20 to 30 grains.

LOBELIA. *U.S.*

Lobelia inflata—Indian tobacco—an indigenous, herbaceous plant. General character of the plant. All parts of it are active. Time of collection.

Colour of the powder—odour—taste—relations to water and alcohol.

Character as an emetic. Poisonous effects. Therapeutical applications. Given in substance, infusion, and tincture. Dose of the powder as an emetic, from 5 to 20 grains. Dose of the tincture (*Tinctura Lobeliæ, U.S.*) in asthma, from f℥j. to f℥ij. every 2 or 3 hours till it acts.

Besides the above emetics, numerous other substances possess the property of producing vomiting, and have been employed for that purpose. Among them may be mentioned the following, viz.

The root of *Euphorbia Ipecacuanha*, and of the *E. corollata*—indigenous plants—emetic in the dose of from 10 to 15 grains. Disadvantages.

The root of *Sanguinaria Canadensis*, or blood-root—another indigenous emetic plant. Shape of the root—colour—colour of the powder—odour—taste. Active ingredient, an alkaline principle called *sanguinarina*. Character as an emetic. Dose of the powder, from 10 to 20 grains—of the tincture, from f℥iij. to f℥ss.

Squill is emetic in the dose of 6 or 8 grains; but is scarcely ever used for this purpose.

Tobacco is also powerfully emetic, but, in consequence of the excessive nausea it produces, and its narcotic properties, it is almost never prescribed internally. Dose of the powder, 5 or 6 grains.

Mustard sometimes acts as an emetic, in the form of powder, in the dose of ℥j. Therapeutical application in reference to its emetic property.

2. *Mineral Emetics.*

TARTAR EMETIC.

Before treated of as an arterial sedative. To be considered here only as an emetic and nauseant.

Character as an emetic—certainty, power, durability. It produces much retching and frequent efforts to vomit, makes a strong impression on the neighbouring viscera and the general system, and occasions much relaxation and prostration of strength.

The indications for its use, deducible from its peculiar mode of operating, are, in addition to the evacuation of the stomach, to agitate and compress the liver, spleen, and other abdominal viscera, to divert irritation from its existing seat by a powerful revulsion to the stomach, to break up morbid associations, to produce nausea and consequent relaxation, and to evacuate the duodenum as well as the stomach. Illustrations of these indications in particular diseases. Tartar emetic is more apt than ipecacuanha to act on the bowels.

Medium dose as an emetic, 2 or 3 grains. The best plan is to give 1 grain dissolved in a little water every 15 or 20 minutes till it acts. Often combined with ipecacuanha. A good proportion is 1 grain of the antimonial to 10 of ipecacuanha, repeated as above.

Dose of *antimonial wine*, as an emetic, f℥j. or f℥ss. repeated in 20 minutes if the first dose should not act. Seldom given to adults as an emetic. Dose for a child 1 or 2 years old, from 20 to 40 drops.

SULPHATE OF ZINC.

The tonic and astringent properties of this salt before treated of.

Characterized as an emetic by its promptness, and the comparatively little nausea which

it produces. Exerts less influence over the system than tartar emetic, and therefore less extensively applicable in disease. Used chiefly as a mere evacuant of the stomach in cases requiring a prompt and energetic emetic, as in those of the narcotic poisons. Under such circumstances, it should be combined with ipecacuanha. Dose, 10 grains under ordinary circumstances; but, in cases of insensibility of stomach from narcotic poisons, ʒss. Reason why it should not be indefinitely increased in such cases.

SULPHATE OF COPPER.

Before considered in reference to its tonic properties. As an emetic, characterized by its very great promptness, and by the very slight nausea which attends its action. Resembles in properties the last mentioned salt, though even more prompt and powerful. Used almost exclusively in cases of poisoning from narcotics. Dose from 2 to 3 grains in ordinary states of the stomach—in poisoning from narcotics, from 5 to 15 grains. Caution as to increasing the dose more necessary even than with the sulphate of zinc.

Many other mineral substances possess emetic properties. The acrid or corrosive poisons, such as corrosive sublimate, verdigris, and the arsenical salts, when taken in large doses, usually excite vomiting. But they are dangerous, and are never used for this purpose.

The *Turpeth mineral*, or *yellow sulphate of mercury* has been used, but is now abandoned. It usually proves emetic in the dose of 5 grains, but is uncertain.

CLASS IX.

CATHARTICS.

General Observations.

Medicines which produce evacuations from the bowels. They operate in various ways;—1. by simply irritating the mucous membrane of the bowels, the muscular coat of which is brought into sympathetic action; 2. by stimulating the exhalent vessels and mucous follicles of the intestines to increased secretion; and 3. by a similar stimulant influence upon the liver, and perhaps the pancreas. Some catharties act in one of these ways, some in another, and some combine two or more modes of action.

Catharties differ as to the parts of the alimentary canal on which they act, some affecting the upper portion more particularly, some the lower, and others operating equally on all parts. This difference is partly, perhaps, ascribable to difference in solubility; but is chiefly owing to the peculiar susceptibilities of different portions of the bowels.

The character of the discharges varies with the kind of cathartic used. Medicines acting on the large intestines produce consistent fecal evacuations, those acting chiefly on the peristaltic motion discharge the liquid contents of the bowels, those which stimulate the exhalents give rise to large watery evacuations, and are hence called *hydragogues*, while calomel, acting especially on the liver, produces bilious stools. Mucous or bloody stools result from the use of the more violent and irritating catharties.

Catharties differ greatly in their power. Some act mildly, merely producing looseness, and are hence called *laxatives;* others act with greater energy, and are called *purges;* and a third set, which are most powerful and irritating, are distinguished by the name of *drastics* or *drastic purges.* Observations upon this difference.

Catharties are useful in disease in several ways.

1. They evacuate the bowels, and thus relieve constipation and all its attendant evils, as well as remove irritating substances, and those having a depressing influence on the system, whether introduced by the mouth, or resulting from chemical changes going on in the alimentary canal, or the product of deranged secretion. Explanations and numerous illustrations of this action of catharties.

2. They directly deplete from the blood-vessels, by increasing the action of the intestinal exhalents, and thus reduce arterial excitement, and they indirectly deplete by removing the sources of the chyle by which the constant drains from the blood-vessels are supplied. Hence their use in almost all febrile complaints of an inflammatory character, in plethoric cases, and in inflammations even unattended with fever.

3. They promote absorption by diminishing the quantity of the circulating fluid, and thus prove useful in dropsy.

4. They act powerfully as revulsives, producing a gentle irritation over the whole tract of the alimentary canal, which, while it is usually safe to the patient from its mildness, is energetic in its revulsive influence by its extent. Peculiarly useful in this way in affections of the head, they are beneficial also in all cases of local inflammation, except those in which the alimentary canal itself is involved in the disease.

5. Some catharties act favourably by increasing secretion from the liver, and thus relieving congestion of this viscus, and of the portal system generally.

It often happens in disease that catharties are called on to meet several indications in the same case.

General observations on the importance of catharties.

The action of the different catharties modified by combination. By mixing several drasties together, they become milder in regard to their irritant property, without losing any of their purgative power. Explanations of this fact.

Small doses of emetic medicines promote the operation of catharties. The same effect is produced to a certain extent by bitters.

Catharties are sometimes favourably modified by combination with substances which exert a chemical agency upon them.

Their tendency to gripe may be lessened by combination with aromatics—and their nauseating effects by the same medicines, and by carbonic acid water.

Catharties operate most speedily and favourably when given on an empty stomach.

Susceptibility to their action is diminished during sleep, and is increased by exercise.

Hence, when a very prompt effect is desirable, they should be given in the day time, on an empty stomach; when a slow operation, with as little inconvenience to the patient as possible, is required, they should be given at bedtime.

During their operation, or before it, the patient should drink some mild diluent beverage, as molasses and water, barley-water, oatmeal gruel, &c.

Hypercatharsis may be checked by from 5 to 15 drops of laudanum by the mouth, or three times the quantity administered by the rectum.

1. *Vegetable Cathartics.*

Observations in relation to *bran*, *sugar*, and *molasses*, as laxative articles of diet.

MANNA. *U.S.*

Concrete juice of *Fraxinus Ornus*, and other species of *Fraxinus*, growing in Sicily, the South of Italy, and Greece. Mode in which the manna is procured. Difference in the result according to the season. Three varieties of manna described; 1. *flake manna*, 2. *common manna*, 3. *fat manna*. Distinguishing characters of these varieties.

Odour of manna—taste—relations to water and alcohol—effects of heat.

The saccharine principle peculiar. Called *mannite*. Mode of preparing mannite—colour—taste—solubilities—difference from sugar in relation to the process of vinous fermentation.

Characters of manna as a cathartic. Therapeutical applications. Dose, ℥j. or ℥ij. Usually given in combination.

SACCHARINE AND ACIDULOUS FRUITS.

General observations on these fruits in their recent and dried state. The following particularized:—*Dried Peaches and Apples*, *Tamarinds*, *Raisins*, *Figs*, and *Prunes*. The last considered as the best of these fruits as a laxative. Cases in which they are particularly applicable.

PURGING CASSIA.—CASSIA FISTULA. *U.S.*

Fruit of *Cassia Fistula*—a large tree growing in the West Indies and East Indies.

Character of the fruit—shape and size—colour—internal structure—disposition of the pulp.

Mode of extracting the *pulp*—its colour, odour, and taste—its character as a cathartic—and its therapeutical applications. Dose as a gentle laxative, ℥j. or ℥ij.—with a view to a more powerful effect, ℥j. or ℥ij. Seldom given alone. An ingredient of the Confection of Senna.

CASTOR OIL.—OLEUM RICINI. *U.S.*

Product of *Ricinus communis*. Character of the plant—native place—where cultivated.

Shape and size of the seeds—colour of the surface—internal structure—modes of extracting the oil.

Properties of the oil—consistence—colour—odour—taste—solubility in alcohol. Mode of detecting adulterations.

Characters as a cathartic. Therapeutical applications. Dose for an adult, f℥j.—for a child of three or four months, f℥j. or more. The dose is larger in proportion for children than for adults. Modes of administration.

Observations in relation to *Olive Oil*, *Linseed Oil*, and *Melted Butter*.

RHUBARB.—RHEUM. *U.S.*

The root of different species of *Rheum*—possibly of *R. palmatum*, *R. compactum*, and *R. undulatum*—herbaceous perennial plants, growing in Central Asia, and cultivated in Europe.

Age at which the root is dug up—preparation for the market—routes by which it reaches us. Varieties, 1. *Russian*, 2. *Chinese*, and 3. *European Rhubarb*.

Russian Rhubarb. Care in its preparation—shape of the pieces—nature of the surface—character of the hole penetrating them—texture—fracture—colour—colour of the powder—odour—taste—effect on the saliva—feel under the teeth—comparative cost.

Chinese Rhubarb. Shape and size of the pieces—object of the hole through them—appearance of the surface—texture—internal colour—colour of the powder—odour—taste—effects on the saliva—feel under the teeth. This variety most used. Its comparative value. Its greater liability to be mixed with worm-eaten, rotten, or defective pieces.

European Rhubarb. Shape and size of the pieces—density—appearance of the fractured surface—colour of the powder—odour—taste—effect on the saliva—feel under the teeth. Inferior to the others as a purgative; but sometimes preferred for chewing. Reason of this.

Chemical constitution of rhubarb. The active ingredients probably a peculiar principle called *rhubarbarin* and *tannin.* Other principles are gum, starch, oxalate of lime, &c. The European has most tannin, and least of the colouring and purgative principle.

Relations of rhubarb to water and alcohol.

Peculiar properties as a cathartic. Therapeutical applications. Cases in which it is contra-indicated. Dose as a stomachic and laxative, from 5 to 10 grains—as a purgative, from 20 to 30 grains. That of the European variety, double. Given in powder with syrup or molasses, or in pill made with soap or simply with water. The root chewed habitually by some persons affected with costiveness.

The officinal preparations are, *Infusion of Rhubarb* (*Infusum Rhei, U. S.*)—*Tincture of Rhubarb* (*Tinctura Rhei, U. S.*), given as a laxative in the dose of f℥j. or f℥ij., as a purge f℥ss. or f℥j.—*Tincture of Rhubarb and Aloes* (*Tinctura Rhei et Aloës, U. S.*), formerly called *elixir sacrum*, given in the same dose as the preceding—*Tincture of Rhubarb and Gentian* (*Tinctura Rhei et Gentianæ, U. S.*), in the same dose—*Tincture of Rhubarb and Senna* (*Tinctura Rhei et Sennæ, U. S.*), commonly called *Warner's Gout Cordial*, in the same dose—*Syrup of Rhubarb* (*Syrupus Rhei, U. S.*), given in the dose of f℥j. or f℥ij. to children—and *Aromatic Syrup of Rhubarb* (*Syrupus Rhei Aromaticus, U. S.*), commonly called *spiced rhubarb*, also given in the same dose.

Effect of roasting on the purgative and astringent properties of rhubarb.

SENNA. *U. S.*

Leaves of several species of Cassia, viz. *C. acutifolia*, *C. obovata*, and *C. elongata*—small shrubs growing in Africa and Arabia. Three commercial varieties—*Alexandria*, *Tripoli*, and *India senna.*

1. *Alexandria senna.* Place of collection and preparation for market—port of shipment—constituents—distinguishing characters of the constituents.

2. *Tripoli senna.* Place of export—distinguishing characters.

3. *India senna.* Origin—commercial history—distinguishing characters.

Garbling of senna—its odour—taste—colour—colour of the powder—relations to water and alcohol—effects of exposure.

Active ingredient, a peculiar principle called *cathartin.*

Character as a cathartic. Therapeutical application. Dose of the powder, ℥j. Seldom used in this form. Generally given in infusion. Officinal formula for the infusion. Dose, f℥iv. every 4 or 5 hours till it operates, or f℥ij. every 2 hours. Mode of counteracting its griping effect. The *Tincture of Senna and Jalap* (*Tinctura Sennæ et Jalapæ, U. S.*), formerly called *elixir salutis*, given in the dose of f℥ij. or f℥ss.

Confection of Senna—Confectio Sennæ, U. S. Constituents—preparation—sensible properties—practical applications—dose, ℥j. to ℥ss.

Syrup of Senna—Syrupus Sennæ, U. S. Given to children in the dose of f℥j. to f℥ss.

AMERICAN SENNA.—CASSIA MARILANDICA. *U. S.*

Leaves of *Cassia Marilandica*—an indigenous herbaceous plant. Period for collecting the leaves. Shape, size, and sensible properties—relations to water and alcohol.

Similar to senna in virtues and uses, but weaker. Given in infusion. Dose, one-third greater than that of senna.

EXTRACT OF BUTTERNUT.—EXTRACTUM JUGLANDIS. *U. S.*

Extract of the inner bark of the root of *Juglans cinerea*—an indigenous tree.

Sensible properties of the bark—mode of preparing the extract—its colour, odour, and taste.

Character as a cathartic. Therapeutical applications. Dose, 20 or 30 grains as a purgative, 10 or 12 grains as a laxative.

ALOES.—ALOE. *U. S.*

Inspissated juice of the leaves of different species of *Aloe*—particularly *A. spicata*, *A. Socotrina*, and *A. vulgaris.* Character of these plants. Native places, and countries in which they are cultivated. Different modes of collecting and preparing aloes. The mode which yields the best, and that which yields the worst aloes. Three commercial varieties, viz. *Cape Aloes*, *Socotrine Aloes*, and *Hepatic Aloes.*

Cape Aloes. The plant which yields it—mode of preparation—place of export—state in which it is imported—state as kept in the shops—appearance of the surface—fracture—colour of the fracture—translucency of the edges—colour of the powder—odour—taste—effects of heat and cold on its consistence.

2. *Socotrine Aloes.* The plant which yields it—place of production—place of export—colour and nature of the surface—fracture—effects of exposure on the colour—translucency of the edges—colour of the powder—odour—taste—effects of heat and cold on its consistence.

3. *Hepatic Aloes.* Origin of the name—sources—places of production—colour—nature of the surface—edges—odour—colour of the powder.

Chemical constitution of aloes. The active part, a peculiar extractive matter. Relations of this principle to water and alcohol. Change produced in it by exposure to air, and by heat. A little volatile oil in the Socotrine aloes. Character of the remaining portion.

Relations of aloes to water and alcohol—effects of decoction upon it—permanence of the infusion.

Characters as a cathartic. Tendency to the pelvic viscera. Mode of operating. Complaints in which it is contra-indicated. Therapeutical applications. Peculiarity as to the dose. As a laxative, given in the dose of from 2 to 6 grains—as a purgative, from 10 to 15 grains. Usually administered in pill.

The officinal preparations are, *Pills of Aloes and Assafetida* (*Pilulæ aloës et Assafœtidæ, U. S.*), given in the dose of from 10 to 20 grains—*Pills of Aloes and Myrrh* (*Pilulæ Aloës et Myrrhæ, U. S.*), sometimes called *Rufus's Pills*, given in the same dose—*Compound Pills of Rhubarb* (*Pilulæ Rhei Compositæ, U. S.*), in the same dose—*Powder of Aloes and Canella* (*Pulvis Aloës et Canellæ, U. S.*), commonly called *hiera picra*, in the same dose—*Tincture of Aloes* (*Tinctura Aloës, U. S.*), given in the dose of f℥ss. to f℥iss.—*Tincture of Aloes and Myrrh* (*Tinctura Aloës et Myrrhæ, U. S.*), formerly called *elixir proprietatis*, given in the dose of f℥j. or f℥ij. as a stomachic and laxative—and *Wine of Aloes* (*Vinum Aloës, U. S.*), laxative in the dose of f℥j. or f℥ij.—cathartic in that of f℥ss. to f℥j.

JALAP.—JALAPA. *U. S.*

Root of *Ipomœa Jalapa.* Place of growth. General character of the plant. Nature of the root.

States in which it is imported—shape and size of the dried tubers—compactness—nature and colour of the surface—character of the fracture—colour internally—concentric arrangement of the colours—colour of the powder—odour—taste—relations to water and alcohol—chemical composition—adulterations—influence of worms upon its activity—relative power of its resinous and mucilaginous portions.

Character as a cathartic. Therapeutical applications. Ordinary combinations. Dose, 15 to 30 grains. Effects of an overdose. Dose of jalap and bitartrate of potassa, from 10 to 20 grains of the former with from ℥j. to ℥ij. of the latter. Dose of calomel and jalap, 10 grains of each—or 5 grains of the former to 15 of the latter. Dose of the resin of jalap, 8 or 10 grains. Disadvantages of this preparation.

Extract of Jalap.—Extractum Jalapæ, U. S. Mode of preparation—sensible properties—dose, 10 to 20 grains. The tincture, *Tinctura Jalapæ, U. S.*, is little used.

MAY-APPLE.—PODOPHYLLUM. *U. S.*

Root of *Podophyllum peltatum*—an indigenous plant. General character of the plant. Nature of the fruit. Asserted poisonous nature of the young shoots.

Shape and size of the dried root—colour—colour of the fibres—taste—odour—colour of the powder—relations to water and alcohol.

Character as a cathartic. Remedial applications. Dose and forms of administration the same as those of jalap.

SCAMMONY.—SCAMMONIUM. *U. S.*

Inspissated juice of the root of *Convolvulus Scammonia.* Character of the plant. Place of its growth. Mode of collecting and preparing the juice. Commercial varieties, *Aleppo* and *Smyrna Scammony.*

Aleppo Scammony. State in which it is imported—weight—consistence—fracture—porosity—colour—effects of exposure on the colour—translucency of the edges—odour—taste—colour of the powder.

Smyrna Scammony. Shape—colour—consistence—fracture—odour—relative value—question as to its origin. *Montpellier Scammony. Factitious Scammony.*

Relations of scammony to water and alcohol—chemical composition.

Character as a cathartic. Therapeutical applications. Seldom given alone. Usually in the compound extract of colocynth. Dose, 5 to 10 grains. There is an officinal confection, little used.

BLACK HELLEBORE.—HELLEBORUS. *U. S.*

Root of *Helleborus niger.* General character of this plant, and place of its growth.

Shape of the root—colour externally and internally—odour—taste—effects of time and exposure—colour of the powder—relations to water and alcohol—effects of long boiling.

Character as a cathartic. Effects of an overdose. Tendency to the uterine system. Therapeutical applications. Sometimes called *melampodium*. Dose of the powder, from 10 to 20 grains—of the decoction, made with 2 drachms to a pint of water, f℥j. every 4 hours till it operates—of the tincture (*Tinctura Hellebori, U. S.*), f℥j.—of the extract (*Extractum Hellebori, U. S.*), 12 or 15 grains.

COLOCYNTH.—COLOCYNTHIS. *U. S.*

Fruit of *Cucumis Colocynthis*. General character of the plant. Place of its growth. Character of the fruit. Mode of preparing it for market.

Size and shape of the fruit as in the shops—colour—texture—consistence—constituents—relative amount of the seeds—odour—taste—relations to water and alcohol.

Active ingredient, a peculiar bitter principle called *colocyntin*.

Character as a cathartic. Effects of overdoses. Therapeutical applications. Dose, 5 to 10 grains. Almost always given in composition.

The compound extract (*Extractum Colocynthidis Compositum, U. S.*) a valuable remedy. Constituents. Dose, 10 to 15 grains.

GAMBOGE.—GAMBOGIA. *U. S.*

Inspissated juice of a tree not certainly known to botanists. Supposed origin. Place and mode of collection. Places whence imported.

Shape and size of the pieces—nature of the surface—colour externally—appearance of the fracture—colour of the powder—odour—taste—effects of heat—chemical composition—relations to water and alcohol.

Character as a cathartic. Disposition to produce vomiting. Therapeutical applications. Dose, 3 to 6 grains, given in pill or emulsion.

Compound Cathartic Pills.—Pilulæ Catharticæ Compositæ, U. S. Constituents. Principles of their formation. Applications. Dose, 3 pills.

ELATERIUM. *U. S.*

Product of *Momordica Elaterium* or *squirting cucumber*. General character of the plant. Place of its growth and culture. Character of the fruit. Modes of obtaining elaterium. The best of these. Clutterbuck's elaterium.

Shape of elaterium—colour—appearance of the surface—weight—texture—taste—odour.

Active ingredient, a peculiar principle called *elaterin*.

Character of elaterium as a cathartic. Danger from overdoses. Therapeutical application. Dose of the purest, an eighth of a grain—of the common, half a grain every half hour or hour till it operates. The best plan is to commence, as a general rule, with one-sixth or one-fourth of a grain. Dose of elaterin, from one-sixteenth to one-twelfth of a grain.

CROTON OIL.—OLEUM TIGLII. *U. S.*

Product of *Croton Tiglium*. General character of this plant. Place of its growth. Shape, structure, colour, and medical effects of the seeds. Formerly called *Grana Molucca* and *Grana Tiglia*. Mode of obtaining the oil from the seeds.

Consistence of the oil—colour—odour—taste—solubility in alcohol—chemical constitution—proportion of the active principle to the inert oil—adulterations—mode of detection.

Character as a cathartic. Effects of an overdose. Therapeutical applications. Dose, 1 or 2 drops. Administered in pill. Mode of preparing the pill.

Effects of its external application. Remedial uses in this way. Mode of application.

2. *Mineral Cathartics.*

SULPHUR. *U. S.*

Origin of crude sulphur or *brimstone*—mode of preparation—places from which it is imported—mode of preparation for medical uses. Called when prepared, *flowers of sulphur*, *sublimed sulphur*, *washed sulphur*.

Form—colour—odour—taste—insolubility in water and alcohol—solubility in volatile and fixed oils—chemical nature.

Peculiarities as a cathartic. Determination to the surface. Alterative action. Proofs of its absorption. Used in costiveness with piles, in dyspepsia, chronic rheumatism and

gout, chronic catarrh, cutaneous affections, &c. Dose as a laxative, ʒj. or ʒij.—with a view to affect the system at large, somewhat less.

Used externally in psora, in the form of ointment. Mode of preparing the ointment. Sometimes applied in the form of vapour. Mode of application. Observations in relation to sulphur springs.

Precipitated Sulphur—Sulphur Præcipitatum, U.S. Lac sulphuris, or *milk of sulphur.* Mode of preparation. Chemical nature. Impurity and its source. Dose, the same as that of sulphur.

CARBONATE OF MAGNESIA.—MAGNESIÆ CARBONAS. *U.S.*

Sources and mode of preparation. Form, as found in the shops—weight—colour—feel—odour—taste—relations to water and to water impregnated with carbonic acid—chemical nature—adulterations.

Peculiarities as a cathartic. Antacid property. Liability to occasion flatulence. Sometimes preferable to the pure earth from its insipidity. Therapeutical applications. Full dose, ʒij. Often given in smaller quantity.

MAGNESIA. *U.S.*

Sometimes called *calcined magnesia* or *magnesia usta.* Mode of preparation. Means of ascertaining the absence of carbonic acid.

Form—colour—taste—odour—relation to water—chemical nature. Peculiarities of Henry's magnesia.

Character as a cathartic. Antacid property. Possibility of accumulation in the bowels. Therapeutical applications. Dose for an adult, ʒj.—for a child two years old, from 10 to 20 grains. Often combined with rhubarb in bowel complaints. Best mode of preparing magnesia for administration.

Saline Cathartics.

Not all mineral, but too much alike to be separated.

Intermediate in power between laxatives and active purges. Act upon the intestinal exhalents and produce watery evacuations. At the same time operate as arterial sedatives. Occasion as little uneasiness in their action as any other cathartics. Adapted by these properties to inflammatory and active febrile complaints. Contra-indicated in typhous complaints. Closely resemble each other in properties, so that one may frequently be safely substituted for another.

SULPHATE OF SODA.—SODÆ SULPHAS. *U.S.*

Commonly called *Glauber's salts.* Sources and modes of preparation. Chemical composition.

Shape of crystals—effects of exposure—proportion of water of crystallization—taste—solubility in water—effects of heat.

Less used than formerly. Dose of the crystallized salt, ℥j. to ℥ij.—of the effloresced, half the quantity. Mode of administration.

SULPHATE OF MAGNESIA.—MAGNESIÆ SULPHAS. *U.S.*

Commonly called *Epsom salt.* Sources and modes of preparation. Chemical composition.

Size and shape of the crystals as ordinarily found in the shops—proportion of water of crystallization—effect of exposure—solubility in water—taste.

The neutral salt usually preferred as a cathartic. Dose, ℥j. or more. Mode of administration. Advantage of solution in carbonic acid water.

SULPHATE OF POTASSA.—POTASSÆ SULPHAS. *U.S.*

Formerly called *vitriolated tartar.* Mode of preparation. Chemical composition.

Shape of the crystals—hardness—use on account of their hardness—solubility in water—effect of heat—taste.

Little used as a cathartic. Difficult solubility an objection. Dose, ℥ss. or ʒvj.

BITARTRATE OF POTASSA.—POTASSÆ BITARTRAS. *U.S.*

Frequently called *cream of tartar*, and *crystals of tartar* when crystallized. Chemically, *bitartrate of potassa.* Source of this salt, and mode of preparation. Imported in the state of crystals. Appearance of these crystals.

Form of the salt as kept in the shops—taste—solubility—effect of time and exposure on the solution.

Peculiarities as a cathartic. Hydragogue properties. Direction to the kidneys. Degree of its sedative or refrigerant power. Therapeutical applications. Particularly useful in dropsy. Dose, ℥ss. to ℥j. Mode of administration. Given in solution as a laxative refrigerant drink, sweetened with sugar. Often combined with jalap.

TARTRATE OF POTASSA.—POTASSÆ TARTRAS. *U.S.*

Formerly called *soluble tartar*. Mode of preparation. Chemical composition. No water of crystallization.

Form—colour—effects of exposure—solubility—effects of heat—effects of acids and acidulous salts.

Little used at present. Dose, from ℥ss. to ℥j.

TARTRATE OF POTASSA AND SODA.—SODÆ ET POTASSÆ TARTRAS. *U.S.*

Commonly called *Rochelle salt*. Mode of preparation. Chemical composition.

Shape and size of the crystals—effects of exposure—proportion of water of crystallization—taste—effects of heat—solubility.

An excellent cathartic. One of the least unpleasant to the taste of the neutral salts. Dose, ℥j. or ℥iss. Composition of the *Seidlitz powders*, and mode of administration.

PHOSPHATE OF SODA.—SODÆ PHOSPHAS. *U.S.*

Mode of preparing this salt. Chemical composition.

Form as kept in the shops—proportion of water of crystallization—effects of exposure—taste—solubility in water.

Sometimes useful on account of its not unpleasant taste. Dose, from ℥j. to ℥ij.

CALOMEL.

Officinal name *Mild Chloride of Mercury—Hydrargyri Chloridum Mite*. Its mode of preparation, and its chemical nature and relations are treated of in another part of the course.

In the dose of from 5 to 20 grains, it usually operates briskly, producing bilious stools, of a dark colour. Sometimes it operates without pain or nausea, sometimes it is very painful and apt to induce vomiting. In the latter case, the discharges from the stomach are bilious. Probability that the irritation is not owing to the direct action of the calomel on the alimentary mucous membrane, but to the increased quantity and disordered quality of the bile which it produces. Reasons for this opinion. Amount of purgative effect not always proportionate to the dose. Sometimes it operates in the quantity of 1 or 2 grains, sometimes very large doses produce little effect. Causes of these peculiarities in its operation. Risk of overdoses. Comparative insusceptibility of infants or young children to its purgative effect. Slowness of its operation. Propriety of following it, if it do not operate in 6 or 8 hours, by another cathartic. Often combined with jalap, rhubarb, seammony, or other active cathartic, to render it more speedy in its operation. Dose of calomel and jalap, 10 grains of each. Generally, 3 or 4 grains of calomel combined with other cathartics, is a sufficient quantity to insure the peculiar advantages of the mercurial. An ingredient in the *Compound Cathartic Pill* of the United States Pharmacopœia, and in *Lee's Antibilious Pills*.

Therapeutical applications. In the commencement of autumnal fevers, and sometimes in their course when attended with congestion of the liver. In other diseases accompanied with deficient hepatic secretion or congestion of the portal system, as constipation, jaundice, hepatitis, &c. One of the best cathartics in cases of inflamed stomach and bowels. Peculiarly adapted to the treatment of the diseases of children. Unfounded apprehensions of danger on the part of some practitioners. The only serious danger to be apprehended from it when properly given, is excessive action upon the mouth. Given in powder or pill. Dose for adults, from 5 to 20 grains—for children two years old, about 4 grains.

ENEMATA.

Uses of purgative enemata—to hasten, facilitate, or increase the action of cathartic medicines—to operate upon the bowels in cases of irritability or inflammation of the stomach, or of debility when purgatives by the mouth might produce exhaustion, or of feculent accumulation in the lower bowels, or habitual constipation dependent on a want of due irritability of the rectum.

The common laxative injection is composed of *common salt*, *molasses*, and *lard* or *olive oil*, each a tablespoonful, and a pint of warm water.

If a more powerful enema is required, f℥ij. of *castor oil* may be added to the above ingredients—or a pint of *senna tea* of the officinal strength may be resorted to, or any other active cathartic in three times its ordinary dose.

The *oil of turpentine* is an excellent material for a purgative injection, especially in typhous cases, and in tympanitic states of the abdomen. From f℥ss. to f℥ij. of the oil may be given, suspended by means of the yolk of an egg in Oss. of warm water.

Assafetida in the quantity of ℥j. rubbed up with warm water may be used under similar circumstances.

Large quantities of warm water will sometimes operate favourably by the mere stimulus of distention.

Very cold water sometimes proves purgative when administered by the rectum, by relaxing spasm.

When but a very slight impression is required, as in habitual constipation, some mucilaginous fluid, as barley water or flaxseed tea, may be employed in the quantity of a pint.

CLASS X.

DIURETICS.

General Observations.

Medicines which increase the secretion of urine. They operate in one or more of three ways—either 1. by entering the circulation and stimulating the kidneys by direct contact, or 2. by the propagation of a sympathetic impression from the alimentary canal to the kidneys, or 3. by promoting absorption, and thus secondarily stimulating the kidneys by filling the blood-vessels. In the great majority of instances, they probably act directly on the kidneys.

Various circumstances influencing the action of the kidneys, necessary to be considered in the use of diuretics. Opposition between the urinary and perspiratory functions. Influence of cold in diminishing the latter and increasing the former. A similar opposition, to a certain extent, exists between the kidneys and the bowels. Cause of this opposition in both instances. Practical inferences. Influence of cold drinks in promoting diuresis. Rule as to the quantity of drink that may be allowed in the treatment of dropsy. Arterial stimulation within certain bounds promotes diuresis, beyond these bounds checks it. Practical inference as to the use of bleeding and other depletory measures, in cases of high excitement, in order to favour the action of diuretics. Influence of mental emotions over the function of the kidneys.

Diuretics are employed chiefly in the treatment of dropsical complaints. They operate partly by diminishing the quantity of circulating fluids, and thereby promoting absorption —partly as evacuants, reducing arterial excitement, and diminishing the irritation upon which the effusion depends—and partly, perhaps, on the principle of revulsion.

Employed also in inflammations and irritations of the urinary organs, after due depletion. They probably act in part by increasing the quantity of urine and rendering it less irritating, in part by depletion from the excited vessels.

In chronic nephritic affections, certain diuretics prove useful by coming into contact with the diseased surface, and changing the nature of the morbid action.

Many of the diuretics are useful in febrile and inflammatory complaints as depletory remedies.

Very uncertain in their action. It is sometimes necessary to employ several successively before the effect is produced. Good often results from combining them.

FOXGLOVE.—DIGITALIS.

Before spoken of as a sedative. As a diuretic, one of the most efficient. Peculiarities of its action. Reason for supposing that it acts on the absorbents. Remedial applications as a diuretic. Dose and forms of preparation before stated.

SQUILL.—SCILLA. *U.S.*

Bulb of *Scilla maritima*, an herbaceous plant, indigenous in the countries bordering on the Mediterranean.

Shape, size and structure of the bulb. Varieties, *red* and *white*. Difference between them. Mode of slicing and drying for market. The parts rejected. Loss of weight in drying.

Shape of dried squill as in the shops—texture—effects of the damp air—colour—odour —taste—relations to water and alcohol.

Active ingredient, a peculiar acrid principle called *scillitin*.

Effects of squill in large doses. Action as a diuretic. Direction to the pulmonary organs. Effects of overdoses. Local effects. Cases to which it is applicable. Dose, from 1 to 3 grains, 2 or 3 times a day, gradually increased till nausea is produced. Object in producing nausea. Often combined with calomel—2 grains of squill and half a grain or a grain of calomel being given 3 times a day till the mouth is affected. Advantages of this combination.

COLCHICUM ROOT.—COLCHICI RADIX. *U.S.*

COLCHICUM SEED.—COLCHICI SEMEN. *U.S.*

Root or more strictly cormus, and seeds of *Colchicum autumnale* or *meadow-saffron*. Character of this plant, and place of its growth and cultivation. Period at which the cormus or root is perfect. Cause of its inefficiency before and after this period.

Root. Shape—size—structure—consistence—mode of preparing for the market—shape of the slices—colour—odour—taste—relations to wine and vinegar as solvents—influence of time.

Active properties supposed to reside in an alkaline principle, at first considered as identical with *veratria*, but at present as peculiar, and denominated *colchicin* or *colchicia.*

Seeds. Time of collection—size—colour—virtues in the outer coating.

Effects on the system. Effects of overdoses. Therapeutical applications. Dose of the root or seeds in substance, from 2 to 8 grains, but scarcely ever given in this state. Usually administered in the form of wine. Two officinal vinous preparations: viz.

Wine of Colchicum root—Vinum Colchici Radicis, U. S. Proportion of the root to the wine. Reasons for the large proportion of the root. Dose, 10 drops to f℥j.—in acute cases, from 10 to 20 drops every 3 or 4 hours, and gradually increased till it produces some effect. Signs of its action. In chronic cases, from 10 to 20 drops 3 times daily, and gradually increased Often combined with magnesia—often with morphia.

Wine of Colchicum seed—Vinum Colchici Seminis, U. S. Proportion of the ingredients. Dose, from f℥ss. to f℥ij.

WHITE HELLEBORE.—VERATRUM ALBUM. *U. S.*
AMERICAN HELLEBORE.—VERATRUM VIRIDE. *U. S.*

Roots of *Veratrum album* and *Veratrum viride*, perennial herbaceous plants, the former a native of Europe, the latter of the United States.

Shape and sensible properties of the root. Active principle, *veratria.*

Effects on the system. Therapeutical applications.

Veratria. Obtained from cevadilla, which consists of the seeds of a Mexican plant. Sensible properties. Relations to water and alcohol. Effects on the system. Therapeutical applications. Chiefly used externally. Mode in which employed.

INDIAN HEMP.—APOCYNUM CANNABINUM. *U. S.*

Root of *Apocynum Cannabinum*—an indigenous, herbaceous perennial plant.

Sensible properties of the root—relations to water and alcohol—effects on the system—remedial application. Used in decoction, made by boiling three half pints of water with half an ounce of the root to a pint. Dose, f℥j. or f℥ij., 2 or 3 times a day.

DANDELION.—TARAXACUM. *U. S.*

Root of *Leontodon Taraxacum*—an herbaceous perennial plant, growing in almost all parts of the world. All parts of the plant contain a milky juice and are possessed of medical virtues, but the root is most efficient.

Shape of the root—colour—odour—taste—relations to water. Best in the recent state. Effects of time.

Effects on the system. Therapeutical applications. Used in decoction and extract. Dose of the decoction made by boiling an ounce of the dried or two ounces of the fresh root in a pint of water to half a pint, f℥ij., 2 or 3 times a day—of the extract, 20 or 30 grains. The extract is officinal. Proper time for preparing it.

JUNIPER BERRIES.—JUNIPERUS. *U. S.*

Fruit of *Juniperus communis*—an evergreen shrub, indigenous in Europe and naturalized in this country.

Shape and size of the berries—colour—odour—taste—relations to water and alcohol.

Active ingredient, a volatile oil, called officinally *Oleum Juniperi.* Colour of the oil—mode of preparation.

Character of Juniper berries as a diuretic. Therapeutical applications. Generally used as an adjuvant to other medicines. Of the infusion made with one ounce of the bruised berries to a pint of water, a pint may be taken during the day. Often associated with cream of tartar. Dose of the oil, from 5 to 15 drops.

FLEABANE.

Erigeron Philadelphicum, and *E. heterophyllum*, herbaceous indigenous plants, growing in the fields. Identical in properties. The whole herb is employed.

Sensible properties of the herb—relations to water and alcohol—medical effects—therapeutical application. Given in the form of decoction, made with an ounce to a pint of water, the whole to be taken daily.

WILD CARROT.—CAROTA. *U. S.*

Seeds of *Daucus Carota*, an indigenous perennial herb. General character of the plant.

Shape and size of the seeds—colour—odour—taste.

Active ingredient, a peculiar volatile oil. This impregnates more or less the whole plant, and the tops and root may be used in the same manner as the seeds.

Character as a diuretic. Effects on the stomach. Therapeutical applications. Used chiefly as an adjuvant to other diuretics. One pint of the infusion, containing the virtues of half an ounce of the seeds, may be used daily.

External application of the root of the garden carrot. Difference between the boiled and unboiled root.

PARSLEY ROOT.—PETROSELINUM. *U.S.*

Root of *Apium Petroselinum*, or common garden parsley. Medical use. Administered in strong infusion. Dose indefinite.

TURPENTINE.—TEREBINTHINA.

The juice of different species of the genera *Pinus*, *Abies*, and *Larix*, consisting essentially of resin and a peculiar volatile oil, called *oil of turpentine*.

Many varieties are known in commerce. In the United States, only two are much employed—the *common white turpentine* and the *Canada turpentine*.

1. *White turpentine—Terebinthina*, *U.S.* Derived chiefly from the *Pinus palustris*, growing in the southern states. Mode of collection. State in which it is brought into the market. Properties as found in the shops—consistence—colour—odour—taste—effects of exposure.

3. *Canada Turpentine—Terebinthina Canadensis*, *U.S.—Canada balsam. Balsam of fir.* Product of *Abies balsamifera* (*Pinus balsamea*, Linn.), growing in the northern states and Canada—cultivated as an ornamental plant under the name of *balm of Gilead.* Position in which the turpentine is found in the tree. Mode of collection. Properties—consistence—colour—transparency—odour—taste—effects of exposure.

General properties of the turpentines—effects of heat—inflammability—relations to water and alcohol—chemical composition. Their virtues reside in the volatile oil.

Effects on the system. Therapeutical applications. Dose, from 10 grains to ʒj., given in pill or emulsion. External use.

Several substances analogous to turpentine, and derived from the same trees, merit notice.

TAR.—PIX LIQUIDA. *U.S.* Obtained usually in this country from *Pinus palustris.* Sometimes also from other species. District of country in which it is prepared. Mode of preparation. Properties—consistence—colour—odour—taste. Chemical constituents. *Creasote* one of those upon which its virtues depend. Relation to water as a solvent. Officinal infusion called *tar water*, or *Aqua Picis Liquidæ*. Therapeutical uses. Administered in substance, or in the form of tar water. Dose of the former, from ʒss. to ʒj.—of the latter, a pint or two in the day. Remedial use of the vapour. Mode of applying it. Use of *tar ointment* (*Unguentum Picis Liquidæ*, *U.S.*). The residue after the evaporation of the volatile parts of tar is called *pitch.*

CREASOTE.—CREASOTUM. *U.S.* Mode of obtaining it. Properties—consistence—colour—volatility—specific gravity—odour—taste—solubility in water and alcohol—influence over the putrefactive process—effect on albumen. Therapeutical applications, internal and external. Dose, one or two drops. Applied externally in aqueous solution or ointment.

RESIN.—RESINA. *U.S.* Commonly called *rosin.* Residue after the distillation of the oil from turpentine. *Yellow* and *white resin.* Difference between them. Properties—consistence—relations to water and alcohol—effect of heat in rendering it adhesive—fusibility—facility of combination with oils and fats—pharmaceutical uses. Basis of the *resin cerate* (*Ceratum Resinæ*, *U.S.*), commonly called *basilicon ointment.* Uses of this cerate.

OIL OF TURPENTINE.—OLEUM TEREBINTHINÆ. *U.S.* Its properties and applications as an arterial stimulant before treated of. Determination to the urinary organs—effect on the urine and on the urinary passages—diuretic action—therapeutical uses in reference to these properties. Dose, 10 to 20 drops, 2, 3, or 4 times, or more frequently, during the day.

COPAIBA. *U.S.*

Commonly called *balsam of copaiva.* Derived from different species of *Copaifera*, growing in Brazil and Guyana. Mode of procuring it from the tree. Its consistence and colour as first obtained.

Consistence of copaiba as kept in the shops—colour—transparency—odour—taste—relations to water and alcohol.

Constituents, principally a volatile oil and resin—the former of which is probably the active principle. Mode of obtaining the oil. Its specific gravity—colour—odour—taste—composition—application to the preservation of the alkaline metals.

Effects of exposure on copaiba. Results of its mixture with magnesia. Officinal pills of copaiba and magnesia. Proportion of the ingredients.

Effects on the system. Remedial applications. Dose, from 10 to 30 drops, 3 times a day. Modes of administration. Dose of the volatile oil, 5 to 15 drops.

SPANISH FLIES.—CANTHARIS. *U. S.*

Commonly called by the plural term *cantharides*. *Cantharis vesicatoria*. Its natural and commercial history, sensible and chemical properties, are spoken of under the head of epispastics.

Effects on the system. Tendency to the pelvic viscera, particularly to the urinary passages. Danger of overdoses. Therapeutical applications. Dose of the powder, 1 grain 2 or 3 times daily—of the tincture (*Tinctura Cantharidis, U. S.*) 10 drops, repeated as frequently.

CARBONATES OF POTASSA.

The *carbonate* and *bicarbonate* are employed—*Potassæ Carbonas, U. S.*, and *Potassæ Bicarbonas, U. S.*

Source from which the carbonate is usually procured. Mode of preparation. Impurities. Results of exposing its solution to the air, or to the action of an acid. Mode of preparing the purer salt, properly called *salt of tartar*.

Form of the carbonate of the shops—effects of exposure—taste—alkaline reaction—solubility in water—insolubility in alcohol.

Cases to which it is particularly applicable. Dose, 10 to 30 grains, 3 or 4 times a day.

The *bicarbonate*. Mode of preparation. Form—composition—solubility. Effects of boiling water and of a red heat. Advantages over the carbonate. Dose, from ʒss. to ʒj.

ACETATE OF POTASSA.—POTASSÆ ACETAS. *U. S.*

Formerly called *sal diureticus*. Mode of preparation. Form and appearance—effect of exposure—taste—solubility. Dose, from ℈j. to ʒj. as a diuretic, every 2 or 3 hours. In larger doses, cathartic.

BITARTRATE OF POTASSA.

Origin, commercial and chemical history, and properties as a cathartic, before described. One of the best saline diuretics. Mode of administration calculated to secure its diuretic operation. Cases of dropsy to which it is peculiarly adapted. From ʒj. to ʒij. given daily in divided doses. Effects on the stomach when long continued.

NITRATE OF POTASSA.

Origin, commercial and chemical history, and properties as an arterial sedative, before spoken of. Sometimes powerfully diuretic. Cases to which it is especially applicable. Dose, from 10 to 20 grains, repeated so as to amount to ʒj. or ʒij. or more in the 24 hours. Effects on the stomach when too long continued.

SPIRIT OF NITRIC ETHER.—SPIRITUS ÆTHERIS NITRICI. *U. S.*

Commonly called *sweet spirit of nitre*. Mode of preparation. Composition.

Form—colour—odour—taste—volatility—inflammability—solubility in water and alcohol—specific gravity—changes produced by time.

Often diluted with alcohol. Injurious consequences.

Character as a diuretic. Therapeutical application in reference to this property. Dose, from fʒss. to fʒj. frequently repeated.

CLASS XI.

DIAPHORETICS.

General Observations.

Medicines which promote perspiration. The vessels of the skin, in a healthy state, are always secreting. The perspiration is generally insensible, because, as soon as secreted, it is converted into vapour. If, however, it be greatly increased in quantity, it retains the liquid form and constitutes sweat. The state of the atmosphere, in relation to the degree of its moisture, has much influence over the form which the perspiration assumes—a very dry state promoting its evaporation, and *vice versa*. The idea was at one time entertained that certain medicines promoted the insensible, others the sensible perspiration; and under this impression, the former were called *diaphoretics*, the latter *sudorifics*. But it is now generally admitted, that the two forms of vapour and liquid are merely different states of the same fluid, depending partly on its quantity, partly on the condition of the atmosphere. There is obviously, therefore, no ground for such a division; and the term diaphoretic is now considered as applicable equally to all the individuals of this class of medicines.

Diaphoretics operate in several different ways. 1. Some give rise to perspiration by relaxing the constricted cutaneous capillaries, while the circulation is in a state of excitement, as in febrile complaints. Illustrations of this mode of action. 2. Others probably act by entering the blood-vessels, and directly stimulating the vessels of the skin to increased secretion. 3. A third set may possibly stimulate the cutaneous vessels by means of the sympathy which connects the outer surface of the body and the stomach. 4. Some, with a tendency to the skin, conjoin a stimulant property by which they at the same time excite the circulation. These have little or no diaphoretic action in the febrile state; but are calculated for complaints in which a cool dry skin is connected with a languid circulation. 5. The diaphoretic action is induced by any thing which fills the blood-vessels, provided, by the application of warmth, a direction of action be given to the skin. Hence the free use of drinks promotes sweating. 6. Lastly, a mere increase in the flow of blood, if action be directed towards the skin by proper measures, and care be taken that the excitement do not proceed so far as to produce constriction of the extreme vessels, will cause an increase of the perspiration. Hence exercise, the heat of the weather, the vapour bath, and gentle internal stimulants, especially if accompanied with warmth and free dilution, prove actively diaphoretic.

These medicines do good in disease; 1. by removing constriction of the cutaneous capillaries, the existence of which, by increasing the heat of the skin, seems to aggravate fever; 2. by depleting from the blood-vessels; 3. by revulsion to the surface; 4. by promoting absorption; and 5. by eliminating noxious matter from the blood. Illustrations on each of these points.

If copious perspiration be required, the patient should be confined to bed, well covered, and clothed with flannel next the skin. Warm diluent drinks may also be given freely, where there is little or no febrile excitement. If the pulse be strong, and high inflammatory action exist, the operation of diaphoretics will be promoted by the previous use of the lancet or other depleting measures. During the continuance of diaphoresis, if this be the main object in view, care should be taken to avoid measures calculated to promote other secretions, particularly that from the kidneys, and bleeding also should be abstained from. Reason for this caution.

Diaphoretics may be conveniently considered under the three heads of 1. *nauseating diaphoretics*, 2. *refrigerant diaphoretics*, adapted to inflammatory complaints, consisting chiefly of saline substances, and 3. *alterative diaphoretics*.

1. *Nauseating Diaphoretics.*

Most emetics are diaphoretic in small doses. Ipecacuanha and tartar emetic are those chiefly used.

IPECACUANHA.

Seldom used alone as a diaphoretic. Usually given in combination with opium. Value of this combination. Explanation of its mode of action. Necessity for intimate union.

Mode of effecting this. Officinal preparation—*Powder of Ipecacuanha and Opium* (*Pulvis Ipecacuanhæ et Opii, U. S.*)—commonly called *Dover's powder.* Proportions of its constituents.

Therapeutical applications of this powder. Dose, 10 grains, to be repeated every 4 or 6 hours when copious and continued perspiration is required.

TARTRATE OF ANTIMONY AND POTASSA.

Cases to which tartar emetic is applicable as a diaphoretic. It probably acts both by directly stimulating the secretory function, and by the nausea which it induces. Dose, from one-twelfth to one-fourth of a grain, repeated every hour or two hours.

2. *Refrigerant Diaphoretics.*

CITRATE OF POTASSA.

Seldom kept in the shops already prepared. A soluble, deliquescent salt. Usually prepared extemporaneously in the state of solution. Employed in two forms, viz. the *neutral mixture* or *saline draught* and the *effervescing draught.*

1. *Solution of Citrate of Potassa.—Liquor Potassæ Citratis, U. S.—Neutral mixture* or *saline draught.* Mode of preparation—proportion of ingredients when made with carbonate of potassa—propriety of straining in this case—proportion when made with the bicarbonate—proportion when citric acid in solution is substituted for lemonjuice. Dose, f℥ss. every hour or two hours.

2. *Effervescing draught.* Ingredients and their proportions. Mode of preparation. Dose, f℥ss. of the alkaline solution with f℥ss. of the lemonjuice or acid solution. Addition of water. Cause and remedy of a failure to effervesce.

Taste of these solutions of citrate of potassa. Circumstances of disease under which they are especially applicable. Cases in which the effervescing draught should be preferred. The medicine sometimes occasions pain in the stomach and sometimes purges. Remedy for these effects. Tartar emetic added to increase its diaphoretic power. Spirit of nitric ether also added in cases of nervous irritation or typhoid tendency.

ACETATE OF AMMONIA.

This salt is employed only in solution. It is officinal in this form under the name of *Solution of Acetate of Ammonia* (*Liquor Ammoniæ Acetatis, U. S.*). Commonly called *spiritus Mindereri,* or *spirit of Mindererus.* Mode of preparation. Reason for preferring distilled vinegar or diluted acetic acid to common vinegar. Colour and taste of the solution. Therapeutical applications. Dose, from f℥ss. to f℥j., to be repeated every hour, 2, or 3 hours.

NITRATE OF POTASSA.

Powers as a diaphoretic. Therapeutical applications. Usually combined with tartar emetic.

*SPIRIT OF NITRIC ETHER.

Described under the head of diuretics. Powers as a diaphoretic. Indicated especially in febrile complaints attended with nervous derangement or typhoid tendencies. Particularly useful in the fevers of children, from its influence over the nervous system. Dose, 20 drops to f℥j., every 2 or 3 hours.

3. *Alterative Diaphoretics.*

GUAIACUM WOOD.—GUAIACI LIGNUM. *U. S.*
GUAIAC.—GUAIACI RESINA. *U. S.*

Products of *Guaiacum officinale,* a large tree growing in the West Indies and South America.

Guaiacum wood. State in which it is imported—hardness—weight—form in which it is kept in the shops—colour—odour—taste—relations to water and alcohol. Its efficacy ascribable to the guaiac which it contains.

Guaiac. Concrete juice. Different modes of obtaining it. Form as found in the shops. Properties—colour—translucency—brittleness—fracture—colour of the powder and change effected in it by exposure—odour—taste—effects of heat—chemical nature—relations to water and alcohol, and to alkaline solutions.

Effects of guaiac on the system. Therapeutical applications of this and the wood. Dose of guaiac in powder, from 10 to 30 grains, to be given in sweetened water or mucilage.

There are two officinal tinctures, viz. the *simple tincture* (*Tinctura Guaiaci, U.S.*), *and* the *volatile* or *ammoniated tincture* (*Tinctura Guaiaci Ammoniata, U.S.*). Dose of either, f℥j. three or four times a day, to be given in milk, or sweetened water, or mucilage. The wood is usually employed in decoction. An ingredient of the compound decoction of sarsaparilla.

MEZEREON.—MEZEREUM. *U.S.*

The bark of different species of Daphne. *D. Mezereum* is officinally recognised. *D. Gnidium* and *D. Laureola* are also said to yield it. General character of these plants. Place of their growth.

Shape of the bark—structure—pliability—toughness—colour—odour—taste—relations to water and alcohol.

Among its constituents is a peculiar principle called *daphnin;* but its virtues are thought to reside in an acrid resin.

Effects upon the system. Operation upon the skin when locally applied. Therapeutical applications. Given in decoction with liquoriec root—℥ij. of the mezereon and ℥ss. of the root being boiled in Oiij. of water to Oij. Dose, a teacupful four times a day. Mezereon is much used as an ingredient of the compound decoction of sarsaparilla.

SASSAFRAS.

The officinal portions of *Sassafras officinale* (*Laurus Sassafras* of Linnæus)—an indigenous tree—are the bark of the root (*Sassafras Radicis Cortex, U.S.*), and the pith of the twigs (*Sassafras Medulla, U.S.*). Properties of the bark as kept in the shops—form—colour—odour—taste—relations to water and alcohol.

Active constituent, a volatile oil called *oil of sassafras*. Mode of procuring the oil—its colour—odour and taste—specific gravity—influence over caoutchouc.

Effects on the system. Therapeutical use. Employed chiefly as an ingredient of the compound decoction of sarsaparilla. The infusion may be given *ad libitum*. Dose of the oil, from 2 to 10 drops.

Sassafras pith. Form—colour—levity—odour and taste—relations to water—character of its mucilage. This is made with ℥j. of the pith to Oj. of boiling water. Therapeutical uses.

SARSAPARILLA. *U.S.*

The roots of several species of *Smilax*, as *S. officinalis, S. syphilitica*, &c. Ascribed incorrectly to the *S. Sarsaparilla*. Native country of these plants. Their general character. Places where the root is collected and whence it is imported into this country. Commercial varieties. State in which the root is imported.

Shape of the root—size—structure—character of the surface—colour—odour—taste—relations to water and alcohol—effects of long boiling—relative value of the cortical and medullary portions.

Active properties thought to reside in a peculiar principle, which should be called *sarsaparillin.*

Effects upon the system. Modus operandi. Therapeutical uses. Given in powder, infusion or decoction, syrup, and extract. Dose of the powder, ℥ss. to ℥j., 3 or 4 times a day. An infusion, and a *compound decoction* (*Decoctum Sarsaparillæ Compositum, U.S.*) are officinal. Constituents of the decoction and mode of preparation. Dose, f℥iv., 3 or 4 times a day. There is also an officinal Syrup (*Syrupus Sarsaparillæ Compositus, U.S.*). Composition of the syrup. Dose, f℥ss., repeated as above. Dose of the *alcoholic extract* (*Extractum Sarsaparillæ, U.S.*), from 10 to 20 grains. This is an excellent preparation. Mode of preparing the *fluid extract.* Dose, f℥j.

CLASS XII.

EXPECTORANTS.

General Observations.

Medicines which increase the secretion from the mucous membrane of the air cells and air passages of the lungs, or facilitate its discharge.

They may be conceived to act by relaxing the secretory vessels when in a state of constriction, or by stimulating them to increased action, either by an immediate influence or by the sympathies which connect the lungs with the stomach. There is also another mode in which certain expectorants operate. The bronchial secretion may be in such quantities as to exceed the powers of expectoration possessed by the patient. This may arise either from the great abundance of the secretion, or from the great debility of the muscles concerned in expectoration. The excessive quantity of the bronchial fluid may result from a debilitated condition of the vessels. Stimulating medicines here prove expectorant by imparting tone to the secretory vessels, thus diminishing the amount of secretion and bringing it within the power of the patient to discharge conveniently, or by increasing the muscular strength, and thus enabling the patient to exert himself more vigorously in its discharge. It is obvious that, in such cases, those medicines must be most efficacious which, with a general stimulating power, unite an especial tendency to the lungs. Practical illustrations.

During the administration of expectorants, the surface should be kept warm, and flannel should be worn next the skin.

Emetic substances usually prove expectorant in small doses. *Ipecacuanha* is sometimes given in doses of one or two grains, and *tartar emetic* in the dose of one-eighth of a grain more or less. For the same purpose, the *wine of ipecacuanha* or *antimonial wine* may be used, the former in the dose of about 30 drops, the latter in that of 15 or 20 drops or more. Cases to which these medicines are applicable as expectorants.

SQUILL.

The origin, commercial history, chemical properties, and effects of squill as an emetic and diuretic have been before treated of. Character as an expectorant. Circumstances under which it may be advantageously employed. Dose, in substance, 1 grain several times a day. Usually employed in the liquid form. Officinal preparations, *vinegar*, *syrup*, *oxymel*, and *tincture*. Dose of the vinegar (*Acetum Scillæ*, *U. S.*), f℥ss. to f℥j.—of the syrup (*Syrupus Scillæ*, *U. S.*), and of the oxymel (*Oxymel Scillæ*, *U. S.*), from f℥j. to f℥ij. Mode of preparing the syrup and oxymel from the vinegar. Dose of the tincture (*Tinctura Scillæ*, *U. S.*), from 20 to 40 drops.

GARLIC.—ALLIUM. *U. S.*

Bulb of *Allium sativum* or garden garlic, a native of Europe, and cultivated in this country. Character of the bulb. State in which it is brought into the market.

Shape, structure and consistence of the lesser bulbs or cloves—odour—taste—relations to water and alcohol.

The virtues of garlic reside in a volatile oil. The expressed juice owes its virtues to the oil.

Effects on the system. Mode of operating. Therapeutical uses. The expressed juice most conveniently administered. Usually mixed with sugar. Dose for a child from f℥ss. to f℥j.

SENEKA.—SENEGA. *U. S.*

Root of *Polygala Senega*, an herbaceous perennial plant, indigenous in this country.

Shape of the root—structure—colour—colour of the powder—odour—taste—relations to water and alcohol—relative virtues of the bark and woody portion.

Its activity is thought to depend on a peculiar acrid principle called *senegin*.

Effects on the system. Therapeutical uses. Given in powder or decoction. Dose of the powder, from 10 to 20 grains. The decoction usually preferred. Prepared by boiling ℥j. of the bruised root with ℥j. of liquorice root in Oiss. of water to Oj., and given in the

dose of f℥j. or f℥ij., 3 or 4 times a day, or in smaller quantities more frequently repeated. There is an officinal syrup of senega. Composition of the *compound syrup of squill* (*Syrupus Scillæ Compositus, U.S.*), commonly called Coxe's hive syrup.

BLACK SNAKEROOT.—CIMICIFUGA. *U.S.*

Root of *Cimicifuga racemosa*—an herbaceous, perennial, indigenous plant—growing in woods. Sometimes called *Cohosh.*

Shape and size of the root—colour—odour—taste—relations to water as a solvent.

Effects on the system. Therapeutical applications. Given in substance and decoction. Dose of the powder, 10 to 30 grains—of the decoction, made in the proportion of ℥j. to Oj., f℥j. or f℥ij., several times a day.

AMMONIAC.—AMMONIACUM. *U.S.*

Inspissated juice of *Dorema Ammoniacum*—an umbelliferous plant, growing in Persia. Mode of collection. Place of export, and route by which it reaches this country. Two forms, that of *tears*, and that of *masses.*

Size and shape of the *tears*—colour externally—brittleness—fracture—colour of the fractured surface.

Shape of the *masses*—appearance when broken—liability to impurities.

Properties of ammoniac—odour—taste—effects of heat—relations to water and alcohol—chemical constitution.

Effects on the system. Therapeutical uses. Dose, 10 to 30 grains. Usually given in emulsion, sometimes in pill. The *compound pills of squill* (*Pilulæ Scillæ Compositæ, U.S.*) are an excellent expectorant.

ASSAFETIDA.

Before described. Here spoken of only as an expectorant. Character in this respect. Therapeutical uses. Dose, from 5 to 15 or 20 grains. Given in pill or emulsion.

BALSAM OF TOLU.—TOLUTANUM. *U.S.*

Product of *Myroxylon Toluiferum*, a tree growing in tropical America. Mode of obtaining the balsam. State in which it is imported.

Consistence as in the shops—colour—translucency—odour—taste—effects of heat—effects of exposure—relations to water and alcohol.

Essential constituents, resin, volatile oil, and benzoic acid. Mode of separating the acid. Form, colour, and sensible properties of *benzoic acid.* A characteristic ingredient of the balsams. Uses.

Effects of tolu on the system. Therapeutical uses. Dose, 10 to 30 grains. Given most conveniently in emulsion. There is an officinal tincture. Objection to this preparation for ordinary use. Dose, f℥j. or f℥ij.

BALSAM OF PERU.—MYROXYLON. *U.S.*

Product of *Myroxylon Peruiferum*—a native of tropical America. Mode of obtaining the balsam. State in which it is imported.

Consistence—colour—odour—taste. Constituents, resin, volatile oil, and benzoic acid. Internal and external use. Dose, f℥ss.

CLASS XIII.

EMMENAGOGUES.

General Observations.

Medicines which promote the menstrual *secretion.* Observations in relation to this function. The question considered whether any medicines exist, which have the peculiar property of exciting it. An affirmative opinion given. Emmenagogues may act either by reaching the uterine vessels through the circulation, or by the extension to them sympathetically of an impression made elsewhere. They act with greatest certainty if given so that their full influence may be felt shortly before the regular period for menstruation. The state of the system should always be considered before prescribing them. If the suppression of the menses be accompanied with a plethoric condition of the blood vessels and the existence of inflammation or a strong inflammatory tendency, they should be preceded by depletory measures, and the milder individuals of the class should be selected. If debility exist, those of a tonic or stimulant character should be preferred. If the affection be attended with constipation of the bowels, the cathartic emmenagogues are obviously indicated.

PREPARATIONS OF IRON.

The *chalybeates* considered as on the whole not inferior to any other medicines in emmenagogue power. Applicable to all cases unattended with local inflammation or general excitement. The *subcarbonate of iron*, or *Pills of protocarbonate* preferred. Often combined with aloes.

ALOES.

One of the most effectual emmenagogues. Believed to exert a specific influence on the uterus, independent of its mere cathartic property. Probably operates through the medium of the circulation. Cases to which it is applicable. Mode of administration. Dose, 1 or 2 grains, 2 or 3 times a day.

BLACK HELLEBORE.

Said to be emmenagogue even when it does not act as a cathartic. Apt to be feeble as found in our shops. Cause of this. As an emmenagogue, usually given in tincture. Dose, f℥ss. to f℥j., 2 or 3 times a day.

SENEKA.

Esteemed emmenagogue by some. Stimulant to the secretions generally. Affects one or another, according to the circumstances under which it is given. It has no especial direction to the uterus, but in consequence of its general influence over the secretions, it may restore menstruation if given with due reference to the natural indications.

GUAIAC.

Before spoken of as a stimulant diaphoretic, with occasional tendency to act on the bowels or kidneys. Believed also to have a decided tendency to the uterus. Found in numerous instances to be an effectual emmenagogue. Peculiarly applicable to cases associated with rheumatism, especially in its neuralgic forms. Use in dysmenorrhœa. Generally administered in the form either of the simple or the ammoniated tincture. Dose, f℥j. 3 or 4 times a day.

SAVINE.—SABINA. *U. S.*

Leaves of *Juniperus Sabina*—an evergreen shrub, indigenous in the south of Europe. General character of the plant.

Shape of the leaves—colour—odour—taste—relations to water and alcohol.

Active principle, a peculiar volatile oil called *oil of savine* (*Oleum Sabinæ*, *U. S.*). Colour of the oil—sensible properties.

Effects of savine on the system. Operation upon the uterus. Unpleasant results from its use in pregnancy. Dose of the powder, from 5 to 20 grains, 2 or 3 times a day—of the oil, from 2 to 5 drops.

SPANISH FLIES.

Character as an emmenagogue. Remedial employment in reference to this property. Cases in which they are contra-indicated. Dose of the tincture, from 10 to 30 drops, 3 times a day.

CLASS XIV.

SIALAGOGUES.

General Observations.

Medicines which promote the secretion of saliva. Some substances taken internally produce this effect, as mercury, &c., but, as they are not used in reference to their sialagogue operation, they cannot properly be noticed here. The only medicines actually employed for this purpose are such as produce the effect by being chewed. All irritants may thus prove sialagogue. None are used exclusively with a view to this effect. When any medicine is employed as a sialagogue, the fact is noticed under other heads. Sialagogues are useful either as revulsives or direct irritants. In the former capacity they are applicable to rheumatism of the face, toothache, &c., in the latter, to paralytic affections of the tongue and throat.

CLASS XV.

ERRHINES.

General Observations.

Medicines which promote the secretion from the mucous membrane of the nostrils. As they usually excite sneezing, they are also called *sternutatories*. No medicines taken internally are known to have a peculiar reference to this function. None are employed as errhines, except by local application to the nostrils. The principles of their action are the same as those of the sialagogues. When any substance is employed as an errhine, the fact is mentioned under other heads. None used exclusively for this purpose. Applied by snuffing them up the nostrils in the form of powder. If very acrid, they should be diluted with some inert substance.

CLASS XVI.

EPISPASTICS.

General Observations.

Medicines which, when applied to the skin, produce a blister. Also called *vesicatories.* They act by producing inflammation of the skin, the vessels of which relieve themselves by the secretion of serous fluid under the cuticle. They prove useful as remedies in various ways.

1. They act indirectly as general stimulants. The system is excited by sympathy with the local inflammation. This effect is greatest during the rubefacient action of the epispastic, and is diminished when the cutaneous inflammation is relieved by the effusion of serum. As general stimulants, they may be used in typhoid diseases, and in intermittent or remittent complaints in which it is desirable to supersede the paroxysm by a strong impression on the system. Remarks as to the proper circumstances of application in both cases.

2. They are powerfully revulsive. In this way they prove useful in various nervous irritations and in inflammations. In cases of mere local determination of blood, they are usually best applied at a distance from the part affected; in inflammations, as near the seat of disease as possible. Grounds of this difference. Another practical rule is that, in inflammatory affections, they should not be applied during the existence of high febrile excitement. Grounds of this caution.

3. They substitute their own action, which spontaneously subsides, for the diseased action existing in the part to which they are applied.

4. They act as local stimulants.

5. They produce local depletion, which, though not abundant, often proves highly useful in inflammation.

6. The pain they occasion is sometimes useful in hypochondriacal cases.

7. They are employed to separate the cuticle, so as to procure a denuded spot for the application of medicines.

SPANISH FLIES.—CANTHARIS. *U.S.*

Cantharis vesicatoria. Synonymes. *Meloe vesicatorius. Lytta vesicatoria.* Countries in which the insect is found. Situations frequented by it. Mode of procuring and preparing it for use.

Shape and size of the fly—colour—colour of the powder—odour—taste—relations to water and alcohol—attacks of insects and results.

Blistering property thought to reside in a peculiar principle called *cantharidin.* Form, colour, and solubilities of this principle.

The following officinal preparations are worthy of notice.

1. *Cerate of Spanish Flies—Ceratum Cantharidis, U.S.*—commonly called *blistering plaster.* It is the *Emplastrum Cantharidis* of the London Pharmacopœia. Constituents and mode of preparation. Mode of application. Used for blistering.

2. *Ointment of Spanish Flies—Unguentum Cantharidis, U.S.* Mode of preparation. Used to dress blistered surfaces in order to maintain a discharge.

3. *Plaster of Pitch with Spanish Flies—Emplastrum Picis cum Cantharide, U.S.*—more frequently called *Emplastrum Calefaciens*, or *warming plaster.* Constituents. Uses.

4. *Liniment of Spanish Flies—Linimentum Cantharidis, U.S.*—generally called *decoction of flies in oil of turpentine.* Mode of preparation. Uses.

Practical remarks on blistering with cantharides. Local action of the epispastic. Strangury a frequent result. Probable cause. Modes of prevention. Treatment. Sloughing of the skin in the blistered part sometimes results. Cause of this occurrence. Rules for applying blisters. Remarks in relation to their size and shape, the means of attaching them to the skin, the previous preparation of the skin, the duration of their application, the difference in this respect between children and adults, mode of dressing blisters, mode of treating them when inflamed, and the means of sustaining the discharge so as to form a perpetual blister.

POTATO FLIES.—CANTHARIS VITTATA. *U.S.*

Synonyme, *Lytta vittata.* An indigenous insect. Plants on which it is found. Mode of collecting it. Size, shape, and colour. Sensible properties similar to those of the Spanish flies. Chemical composition probably similar. Uses the same.

CLASS XVII.

RUBEFACIENTS.

General Observations.

Medicines which inflame the skin without vesicating as an ordinary result. The principles of their operation are the same in general as those mentioned under the head of epispastics. But some indications are answered best by one class, others by the other.

As general stimulants, blisters are preferable when a slow and permanent impression is to be produced—the active rubefacients, when a sudden and powerful but fugitive action is requisite. The former are superior to the latter in the power of interrupting morbid associations. On the principle of revulsion, blisters are more useful in local inflammations —rubefacients, in spasm and other forms of nervous irritation. When a very slight but long continued action is desired, the indication is best fulfilled by mild rubefacients. As depletory means these are obviously inferior to blisters, and they cannot be employed to obtain a raw surface. For the mere purpose of producing pain, the powerful rubefacients are even more efficient than blisters.

MUSTARD.—SINAPIS. *U. S.*

The seeds of two species of Sinapis—*S. alba* and *S. nigra*—natives of Europe—cultivated in our gardens. General character of the plants.

Their seeds distinguished by the names of *white* and *black mustard seed.* Size and colour of the two varieties. Colour of the powder. Mode of preparing it.

Chemical composition of the seeds. Mucilage contained in their coating, a fixed oil in the interior part. Among their constituents is a principle, which, in the black mustard is converted into a volatile oil by the reaction of water, in the white into an acrid substance not volatile. The odour and taste are ascribable to these principles.

Effects of mustard on the system. Operation when taken whole. Operation when swallowed bruised or in the form of powder. Internal uses. Employment as a rubefacient. Mode of applying it. Duration of its application. Local effects. Occasional unpleasant results. Cases to which it is especially applicable.

CAYENNE PEPPER.

Before spoken of as an arterial stimulant. Effects as a rubefacient. Modes of applying it. Cases to which it is applicable.

OIL OF TURPENTINE.

Already described. Powerfully rubefacient. Mode of applying it. Peculiar effect on the skins of some individuals. Cases to which it is applicable.

BURGUNDY PITCH.—PIX ABIETIS. *U. S.*

Product of *Abies communis* (*Pinus Abies*, Linn.), a large evergreen tree, growing in the north of Europe, and commonly called *Norway spruce fir.* Mode of procuring and preparing the pitch.

Form as it is found in the shops—colour—effect of exposure on the colour—consistence —difference in this respect in cold and hot weather—smell—taste—chemical composition —effects of heat—consistence at the temperature of the body.

Properties as a rubefacient. Poisonous effect on the skins of some individuals. Therapeutical uses. Modes of application.

CANADA PITCH.—PIX CANADENSIS. *U. S.*

Sometimes called *hemlock gum* and *hemlock pitch.* Obtained from the *Abies Canadensis* (*Pinus Canadensis*, Linn.), an evergreen indigenous tree, growing in the northern states and Canada. Mode of collecting and preparing the pitch. Colour. In sensible, chemical, and medicinal properties, closely analogous to Burgundy pitch.

SOLUTION OF AMMONIA.—LIQUOR AMMONIÆ. *U. S.*

Often called *water of ammonia* or *aqua ammoniæ.* Chemical nature. Mode of preparation. Odour. Relation to the oils. Effects as a rubefacient. Modes of application. There is an officinal preparation under the name of *Linimentum Ammoniæ, U. S.*, commonly called *volatile liniment.* Composition of this liniment.

CLASS XVIII.

ESCHAROTICS.

General Observations.

Substances which destroy the life of the part to which they are applied, and produce a slough. They operate either by a direct influence on the vitality of the part, or by a chemical agency. They are employed to form issues, to change the nature of the morbid action in diseased surfaces by destroying the part affected, to remove fungous granulations, and to open abscesses.

Observations on the *actual cautery*. *Iron heated to ignition* may be used to arrest hemorrhages in places which are beyond the reach of a ligature.

Moxa is another form of the actual cautery. Meaning of the term. Materials from which moxa is prepared, and mode of preparation. Use of nitre and bichromate of potassa. Mode of application. Therapeutical uses. Principles of action.

POTASSA. *U.S.*

Common caustic. Mode of preparation. Shape and size of the pieces—colour—change upon exposure—mode of keeping—impurities.

Used to form issues, to destroy poisoned surfaces, and to open abscesses. Modes of application. Subsequent treatment so as to form an issue. Principles upon which issues act in the cure of disease.

NITRATE OF SILVER.

Lunar caustic. Mode of preparation. Shape of the pieces—size—colour—translucency—change upon exposure—mode of preserving them. Peculiar character as an escharotic. Used chiefly to destroy the surface of diseased ulcers. Particular applications. Mode of application. Effect upon the cuticle. Used in weak solution as a local stimulant.

ARSENIOUS ACID.—ACIDUM ARSENIOSUM. *U.S.*

White oxide of arsenic. White arsenic. Mode of obtaining it. State, as it is kept in the shops—colour—opacity—nature of the surface—fracture—odour—taste—solubility in water. Danger of mistaking it for magnesia when in powder. Character as an escharotic. Therapeutical applications.

SULPHATE OF COPPER.

A mild escharotic, not much used as such at present. A very strong solution containing 20 grains to f℥j. of water is sometimes applied to chancres, and to the cankerous sore mouth of children.

CORROSIVE CHLORIDE OF MERCURY.—HYDRARGYRI CHLORIDUM CORROSIVUM. *U.S.*

Bichloride of Mercury. Corrosive sublimate. To be spoken of among the preparations of mercury. Referred to here only as an external application. Seldom used as an escharotic. More frequently as a stimulant application. Use in onychia maligna. Its solution applied to ulcers, particularly those of a syphilitic character, to certain cutaneous eruptions, and as an injection in gleet.

DRIED ALUM.—ALUMEN EXSICCATUM. *U.S.*

Burnt alum. Mode of preparing it. Character as an escharotic. Purposes for which it is used. Mode of applying it.

THE MINERAL ACIDS.

Though powerfully caustic, these are seldom used, in consequence of the inconvenience of applying them in the liquid form. They are sometimes employed to destroy the cuticle hastily, and procure an inflamed surface. Diluted sulphuric and nitric acids are occasionally used as stimulants to old ulcers. These acids are also employed in the form of ointment in cutaneous diseases.

CLASS XIX.

DEMULCENTS.

General Observations.

Bland, unirritating substances, which form with water a viscid solution. They generally consist of gum, or of a mixture of gummy with saccharine and farinaceous substances.

Demulcents act in two ways. 1. Applied in solution to an irritated or inflamed surface, they protect it against the influence of irritating matters. 2. Mixed with acrid substances, they blunt their acrimony, and render them less irritating to the parts with which they come in contact. Illustrations of these modes of action. Therapeutical applications. Question as to their mode of action in cases in which they cannot come into direct contact with the diseased surface, as in nephritic complaints. Probability that, in such cases, their solution acts as a mere diluent. Substances belonging to this class are useful also as diet for the sick. Used in pharmacy to suspend insoluble substances in water, and to give adhesiveness and consistence to pills and troches.

GUM ARABIC.—ACACIA. *U.S.*

Product of numerous species of *Acacia*, thorny trees or shrubs growing in Africa and Arabia. Mode of procuring the gum. Places in which it is collected. Places of export. Several varieties are known in commerce. For medical purposes it is sufficient to distinguish two, viz. *Turkey gum* and *Senegal gum*.

Turkey gum. Shape and size of the pieces—colour—cracks or fissures—effect of these on the transparency—great brittleness.

Senegal gum. Shape and size of the pieces—colour—peculiar appearance of the surface—transparency.

General properties—colour of the powder—smell—taste—relations to water and alcohol—effects of exposure upon the solution.

Character as a demulcent. Therapeutical applications. Mucilage for drink made in the proportion of ℥j. of gum to Oj. of water. Pharmaceutical uses.

TRAGACANTH.—TRAGACANTHA. *U.S.*

Product of several species of *Astragalus*, small, thorny shrubs, growing in Greece and Asia Minor. Mode of collection. Shape of pieces—colour—translucency—difficult pulverization—mode of pulverizing—odour—taste—relations to water. Components chiefly gum and bassorin. Tenacity of its mucilage. Purposes for which it is employed.

SLIPPERY ELM BARK.—ULMUS. *U.S.*

The inner bark of *Ulmus fulva* or slippery elm, a large indigenous tree. Mode of preparation.

Shape of the pieces—colour—texture—odour—taste—relations to water.

Therapeutical applications. Used in infusion prepared in the proportion of ℥j. to Oj. External use.

FLAXSEED.—LINUM. *U.S.*

Seeds of *Linum usitatissimum*, or common flax. A fixed oil is contained in the internal parts, and mucilage in the skin. Mode of obtaining the oil. Called *Linseed oil* (*Oleum Lini*, *U.S.*). Colour, odour, and taste of the oil. Uses.

Mode of extracting the mucilaginous ingredients. Decoction of the seeds improper. The infusion made in the proportion of ℥j. to Oj.

Uses of powdered flaxseed.

LIQUORICE ROOT.—GLYCYRRHIZA. *U.S.*
LIQUORICE.—EXTRACTUM GLYCYRRHIZÆ. *U.S.*

Root of *Glycyrrhiza glabra*, an herbaceous, perennial plant, indigenous in the south of Europe. Whence imported.

Shape and size of the root—character of the epidermis—colour externally and internally —colour of the powder—odour—taste—relations to water.

Characteristic principle, a sweet substance called *glycyrrhizin*. Different from sugar. Uses of the root. Proportion in decoction, ℥j. of the root to Oj. of water. Uses of the powdered root.

Mode of preparing the extract. Place from which it is imported. Shape and size of the pieces—colour—appearance of the fracture—taste—impurities. Mode of refining. Shape and size of the pieces of refined liquorice. Uses.

ICELAND MOSS.—CETRARIA. *U.S.*

Cetraria Islandica (*Lichen Islandicus*, Linn). Indigenous in the north of Asia, Europe, and America. Size and shape of the plant—consistence—colour—odour—taste—relations to water.

Interesting constituents, a starch-like principle to which it owes its demulcent properties, and a bitter principle. Solubilities of these two principles. Mode of separating the bitter.

Effects on the system. Therapeutical uses. Administered in decoction made by boiling ℥j. of the moss in Oiss. of water to Oj. Given *ad libitum*.

IRISH MOSS.—CHONDRUS. *U.S.*

Carrageen. Chondrus crispus (*Fucus crispus*, Linn.). General character of the plant. Place of its growth. Therapeutical uses. Mode of administration. The decoction made in the proportion of ℥ss. of the moss to Oj. of water.

SAGO. *U.S.*

Product of *Sagus Rumphii*, or sago palm, indigenous in the East Indies. Obtained from the pith of the trunk. Mode of preparation. Two varieties in the market—common sago and pearl sago.

Shape, size, and colour of the grains of common sago, and of those of pearl sago—taste —relations to water. Consists almost exclusively of starch.

Uses in disease. Mode of preparing it for exhibition. Proportions for the decoction, ℥j. of sago to Oj. of water. Additions.

TAPIOCA. *U.S.*

Product of *Jatropha Manihot*, a plant of tropical America. Places in which it is cultivated. Two varieties—the sweet and bitter. Difference between them. Tapioca obtained from the root. Mode of preparing it.

Shape and size of the grains—colour—hardness—taste. Uses and mode of exhibition the same as those of sago.

ARROW ROOT.—MARANTA. *U.S.*

Product of *Maranta arundinacea*, and other species—plants of the West Indies—cultivated in our southern states. Obtained from the root. Mode of preparation.

Form—colour—chemical nature—relations to water. Liability to mustiness. Purposes for which it is used. Mode of preparing it for use. Proportion for solution, a tablespoonful to the pint of water.

Starch of the potato, and from other sources, is often substituted for arrow root.

BARLEY.—HORDEUM. *U.S.*

Mode of preparing barley for medical use. Commonly called *pearl barley* (*hordeum perlatum*) when prepared.

Shape and size of the grains—colour—chemical constitution—relations to water—liability to mustiness. Medical uses. Form of administration. *Decoction of barley* (*Decoctum Hordei*, *U.S.*), commonly called *barley water*. Mode of preparation. Occasional additions.

CLASS XX.

EMOLLIENTS.

General Observations.

Substances capable of retaining moisture, and forming a soft mass, without irritating properties. They serve only as vehicles of warmth and moisture to the skin. They are useful in relieving the tension of inflamed parts, and in promoting suppuration. The individuals of the class are described under other heads.

CLASS XXI.

DILUENTS.

General Observations.

Mild liquids, which serve to dilute the contents of the stomach and bowels, to fill the blood-vessels, and to increase and at the same time dilute the secretions. The only liquid which can be used for this purpose is water. Additions are generally made in order to give it flavour, to render it somewhat nutritive, or to answer some indication independent of mere dilution. The advantages resulting from diluent drinks are, that they render the fluids with which they mix in all parts of the body less irritating, and thus absolutely relieve inflammatory affections. They may also prove useful, in some instances, by restoring a due degree of fluidity, and consequently of mobility, to the blood and secretions, rendered thick and viscid by disease.

CLASS XXII.

Medicines belonging to the first great Division, not capable of being arranged in any of the preceding Classes.

ERGOT.—ERGOTA. *U. S.*

Sometimes called *spurred rye* or *Secale cornutum*. Product of *Secale cereale*, or common rye. Part of the plant. Question as to its origin.

1. Size and shape of the grains—longitudinal furrows—colour, external and internal—
2. odour—taste—relations to water and alcohol.

3. Effects on the system. Consequences of its free and long continued use. Therapeutical applications. Given in powder or infusion. Dose of the powder, from 10 to 20 grains—of the infusion prepared with one drachm of ergot to four fluidounces of water, about f℥j.—of the *wine* (*Vinum Ergotæ*, *U. S.*), f℥j. to f℥iij. - Oil 20 to 50 drops.

NUX VOMICA. *U. S.*

1. Seeds of *Strychnos Nux Vomica*, a tree growing in the East Indies. Character of the fruit.

2. Shape and size of the seeds—character of the surface—structure—character of the internal part—colour, external and internal—hardness—difficulty of pulverization—odour—taste—relations to water and alcohol.

3. Active ingredients, two alkaline principles called *strychnia* and *brucia*. The latter found also in the false Angustura bark, but not used because similar in properties to strychnia, and yet much weaker.

4. *Strychnia*. Form—colour—odour—taste—effects of heat—solubility in water and alcohol. Obtained for use from the *bean of St. Ignatius*.

5. Effects on the system. Poisonous action. Therapeutical applications. Dose of the powder, 5 grains—of the alcoholic extract from half a grain to 2 grains—of strychnia, from one-twelfth to one-sixth of a grain. External use of strychnia. Mode of applying it.

6.

ARSENIC.—ARSENICUM.

Probably inert in the metallic state. Exceedingly powerful in combination. The arsenical preparations, when given in small doses, produce at first little obvious effect; but after a few days edematous swelling appears about the face, and if the medicine is persevered in, nausea occurs, with tremors, muscular debility, diminished force of the circulation, and other indications of an enfeebled condition of the vital powers. Their action appears to be compounded of an irritative operation upon the stomach, and of an operation entirely peculiar to themselves upon the system at large. They are evidently absorbed; as they produce the same effects when applied externally as when taken into the stomach. In large quantities they are powerfully poisonous. The symptoms produced are those of inflammation or disorganization of the mucous membrane of the stomach and bowels, complicated with great general prostration. Symptoms enumerated. Treatment of the poi-
1. sonous effects of arsenic. Use of the *hydrated peroxide of iron* as an antidote. Mode of
2. preparing this oxide.

3. Arsenic is contra-indicated in all cases of irritated or inflamed stomach, and in states of disease attended with great prostration of the vital powers. Useful in intermittent diseases, in which it may be employed when circumstances forbid the use of quinia, or this medicine has been used ineffectually. Employed also in cutaneous affections, particularly in those of a scaly character, and in secondary syphilis especially when attended with nodes.

The only preparations recognised by the U. S. Pharmacopœia are the *Arsenious acid* and *Solution of Arsenite of Potassa*. The sensible and chemical properties of the acid have been already treated of. Its dose is one-twelfth of a grain, made into pill with the crumb of bread, and taken 3 times a day.

4. *Solution of Arsenite of Potassa—Liquor Potassæ Arsenitis*, *U. S.*—commonly called *Fowler's solution*. Mode of preparation—colour—taste. Dose, 10 drops, 2 or 3 times a day.

MERCURY.—HYDRARGYRUM. *U. S.*

1. The action of mercury is quite peculiar. In very small doses, it may be given so as to produce no obvious effects upon the system, and yet to exert a powerful influence in dis-

Ergot.

1. It is found in the head of rye occupying the place of the grain in the glume - other grasses produce it. At first supposed to be a disease of the grain caused by an insect - De Candolle regarded it as a distinct parasitic fungus occupying the place of the grain - Lucket, who has paid most attention to it, discovered a fungous investing the young grain like cob-webs, and, growing with it, & producing a change in the nature of the grain; his opinion is no doubt correct.

2. Slender grains, from half an inch to two inches long - spindle shaped - curved - furrowed & cracked - externally violet brown internally lighter - odour in mass like that of putrid fish, - taste slightly nauseous - grains flexible not easily pulverized - yields its virtues to water & alcohol. Ergot is fed upon by a very small insect, which destroys the interior & leaves a mere shell, should not be more than a year old. The powder is dark grey - best kept in grains.
The active principle has not been isolated. Ergotin possesses contains the poisonous properties of Ergot but not its specific action on the uterus, it is soluble in alcohol but not in water.
The oil of Ergot contains the active principle. It is reddish brown, slightly acid, lighter than water.

3. In moderate dose it produces no obvious effects in the male, but in the pregnant female it causes forcible uterine contractions. In large doses nausea & narcotic poisoning ℥j. - When long used as in contaminated rye its effects are dry gangrene & a kind of typhoid fever, both accompanied with much formication hence called in Germany (where as well as in France, & central Europe generally it has frequently been epidemic) the creeping sickness. It acts probably by a peculiar sedative or paralyzing influence on the capillaries, hence its use as a styptic, especially in hemorrhage from the lungs & uterus. When given freely in

such cases. I have observed a diminution of the force of the pulse. Used chiefly to promote uterine contractions, when the os uteri is dilated or dilatable, & the delay is owing solely to the feeble contractions of the uterus - to restrain uterine hemorrh. puerperal or not - to complete abortion, when commenced & attended with hemorrh. - in hemorrh. generally. It has been recommended in paralysis, diarrh., dysent., stricture of urethra in which it is probably not beneficial.

Nux Vomica.

1. Berry size & colour of an orange, covered with a hard rind enclosing a pulp which envelopes the seed.
2. Circular, concave on one side, an inch in diam., ⅛ inch thick covered by a thick silky coat - internally a tough horny nucleus - external coat is grey, internal nucleus white - odourless - intensely bitter - yields its virtues to alcohol, but sparingly to water.
3. These alkalies exist in the nucleus in combination with igasuric acid. Brucia is only one twelfth as powerful as strychnia
4. White, tetragonal crystals - inodorous - intensely bitter - fusible, not volatile, decomposed at low temperature - soluble in alcohol, very sparingly in water (1gr. in f ℥XIV.)
5. In small dose tonic - in larger doses it produces tetanic (formication) muscular contractions, a steady rigidity of the muscles like tetanus probably from its action on the spinal marrow - causing a feeling of stricture of the chest, & retention of urine. Its modus operandi is by entering the circulation & coming in contact with the spinal marrow - Its poisonous effects are tetanic convulsions, asphyxia, & death. - Used in paralysis (not depending on effusions) & other nervous affections. - prolapsus ani & incontinence of urine from paralysis [dyspepsia, pyrosis, gastrodynia, dysentery, tetanus, neuralgia]
6. Used endermically in amaurosis &c. in doses not exceeding one half grain at commencement, or one fourth gr. of its salts.

[The dose of strychnine or its salts (acetate, sulphate, nitrate

or minutes) is, at the commencement $\frac{1}{20}$ or $\frac{1}{16}$ of a grain, gradually increased until its effects, formication & twitching, on the muscular system are observed.]

Arsenic.

Vomiting, burning pain in throat & stomach & extending to abdomen bringing on tenesmus & diarrhoea, - constriction of throat, thirst &c. Sometimes acting quickly it does not inflame the stomach, but produces death by acting on the nervous system. Small quantities applied to denuded surfaces act more readily than large as the corrosive effect destroys the power of absorption. Treatment of poisoning - Use the stomach pump - provoke vomiting by tickling the throat with a feather - give an emetic (sulphate of copper or zinc) - promote the vomiting & wash out the stomach by demulcents, as milk, egg-white, flour & water, sugar & water &c. Give moist hydrated sesquioxide of iron [to an adult a tablespoonful, to a child a teaspoonful every 5 or 10 minutes until the urgent symptoms cease] 20, 30, or 40 times as much as the quantity of arsenic swallowed - afterwards a cathartic combined with the sesquioxide.

1. Boil a solution of sulphate of iron with nitric acid (some sulphuric acid being added) and when cool precipitate the oxide by liquor ammon - the boiled solution should be always kept at hand so that the precipitate, which is efficacious in proportion to its freshness, may be readily formed by the addition of ammonia -
3. Impurities in feebleness from intemperance, scrofula or tuberculous disease.
4. Boil arsenious acid, 9.64. with an equal quantity of carbonate of potash - the arsenious acid combines with the potash, & the carbonic acid is disengaged. A little compound Spirit of Lavender is added, & enough water to make the solution fill a pint. The Spirit of lavender is used for its colour & flavour.

Mercury,

Has been variously classed among alteratives, tonics & sedatives,

sometimes called sialagogue, but improperly because it is not used with reference to this result.

2. Its first impression is on the pulse, rendering it quick & irritable, hence some physicians can determine when it will act. The first symptoms of ptyalism are tenderness & tumefaction of the gums, which are pale except where they surround the teeth - thirst, deep red - coppery taste in the mouth, swelling of salivary glands & great flow of saliva.

3. Is an antiphlogistic, but how is uncertain.

4. In the course of diseases the secretions are frequently arrested especially in fevers - there is dry tongue & dry skin without a very full or strong pulse, here use mercury - as on 9th day of fever - affect the gums very slightly, salivation is not necessary nor desired - may be combined in these cases with diaphoretics, diuretics &c.

5. In acute inflammations, when the acute symptoms do not yield to the lancet employ mercury, otherwise not. In chronic inflammations of all kinds it is very useful; those who neglect it do wrong - pleurisy, bronchitis, pneumonia, laryngitis, hepatitis, erysipelas, dropsy - salivation is not necessary.

6. Mercurials being absorbed not by the lacteals, but by the veins act with peculiar energy on the liver in the portal circulation. Useful in many diseases depending on hepatic derangement; as dropsy, dyspepsia, hypochondriasis, mania, splenitis.

7. In syphilis it is the best remedy when not abused, The idea that it produces a disease similar to syphilis is erroneous - various persons affected with syphilis are very susceptible to mercurial influence, the remedy is therefore prematurely discontinued, the disease returns & is attributed to the mercury.

8 I believe the most efficient remedy for lead-poisoning is mercury. Once used largely in phthisis, but proved now to be harmful - not to be employed in the tubercular or scrofulous diathesis with a view to eradication - not beneficial in cancer, melanosis, & fungus hæmatodes - If any disease be found to resist the

ordinary treatment mercury may be tried & not altogether empirically: for latent inflammation may often exist— Epilepsy, chorea &c may depend on an organic lesion of the spine which mercury may relieve. In some chronic throat affections mercury may prove resolvent but it should not be unnecessarily employed, as much salivation is in such cases necessary.

[Mercury not equally serviceable in all inflammations — its use depends 1st on the nature of the ~~organ~~ tissue (most beneficial to membranous tissues especially those which exude coag. lymph or serum, hence useful in meningitis, pleuritis, pericarditis, peritonitis; croup; ophthalmia especially iritis; dysentery, synovitis) 2ly on the structure of the organ (diseases of liver — pneumonia especially in hepatization): 3ly on the nature of the inflam: (very useful in syphilis; less so in ~~scrofula~~ rheumatism; still less in scrofula (nevertheless Van Swieten's treatment with bi-chloride is much employed & with great benefit — Mott.); decidedly injurious in cancerous & malignat diseases.)] Pereira's Mat. Med. & Therap. Vol. I. p. 595-6.

9. Proofs of absorption [it has been detected in the blood (in intimate combination) — in the secretions (perspiration, saliva, bile, urine &c — in the solids (bones, brain, pleura, cellular tissue &c)]

10. Parts favourable for inunction, are where the cuticle is thin & the absorbents numerous as, the axilla, inner side of arm, groin & inner side of the thigh. The ointment should be applied by means of a glove to protect the hand.

11. Dressings of mercurial ointment to blistered surfaces, wrapping in sheets smeared with it, fumes inhaled, (especially in ulcerations of the throat), or introduced into the rectum. But the effect of fumigation is fugitive & should be kept up by mercurials internally.

12. Three grains of blue mass have produced ptyalism, & one grain of calomel has caused profuse ptyalism; hence the patient should be questioned as to such peculiarity. Children up to the 12th year are little susceptible of salivation. The malignant fevers (as yellow fever) & malarious diseases of warm climates render the system almost insusceptible.

13. Fetor of the breath, coppery taste, & a slight degree of inflammation appear first, & simultaneously the patient feels pain on pressing the teeth together, or pressing the fingers along the gums, which are red & swollen. The gums are then whitened & the saliva increased in quantity. In severe cases the gums swell considerably the cheeks swell, the tongue swells & the impression of the teeth may be seen on it. the throat becomes sore, deglutition is difficult or impossible, the parotid gland swells. The teeth are painful & saliva flows abundantly, the fetor of the breath is insufferable - fever takes place & sometimes sloughing of the gums, loss of the teeth & necrosis of alveolar processes. After its subsidence adhesions between the tongue & jaw may remain. Treatment:- No injury ensues from exposure

ease. In this mode of action it is said to be *alterative.* More freely employed, it makes a very sensible impression. The most evident symptoms are those ranked together under the name of salivation or ptyalism. Description of these symptoms. At the same time, it gives rise to an excitement of the circulation, evinced by a peculiar quick and jerking pulse, increases nervous susceptibility, augments most of the secretions, and invigorates absorption. Probably other unperceived changes take place in the system, the actions of which appear for a time to be completely revolutionized. The effects produced by mercury gradually subside, and, unless very severe, usually leave the general health unimpaired.

Therapeutical applications of mercury considered, *first*, in reference to its general influence upon the system as indicated by its action upon the gums; *secondly*, in reference to its alterative influence. The effects of mercury connected with its sialagogue operation, upon which curative indications are founded, may be included under the following heads:

1. Excitement of the secretory functions. Circumstances under which it may be useful in reference to this effect. Whenever the secretions are arrested, and no contra-indicating circumstances exist.

2. Altered condition of the capillary vessels. It is probably by some influence over these vessels that mercury proves useful in most chronic inflammations. It appears to be peculiarly adapted to inflammations attending a typhoid state of the system.

3. Peculiar action upon the liver. Upon this organ and its appendages mercury exerts an influence greater, perhaps, than upon any other part of the system. Peculiarly advantageous in hepatic inflammations and congestions, and in all the numerous complaints which have their origin or support in deranged conditions of this organ.

4. Excitement of the absorbents. Hence its use in dropsical complaints, and in chronic tumefactions, though it operates in these affections also upon other principles.

5. Local inflammation of the mouth and fauces. This is no doubt sometimes useful by its revulsive influence. But it is seldom advisable to employ mercury with a view to this effect alone; as there are other more convenient and safer modes of producing revulsion.

6. General revolutionizing action. There are some complaints in which the curative influence of mercury admits of explanation, in the present state of our knowledge, only by resorting to the supposition that it produces general effects incompatible with the deranged condition in which the disease consists. One of these complaints is syphilis. Observations in relation to the prejudice against its use in this affection. Much of this prejudice is ascribable to its abuse. Great care is requisite to restrain its action within due limits, and to persevere with it sufficiently long. The poisonous effects of lead upon the system constitute another disease in the cure of which mercury may be said to act by its revolutionizing influence. Further remarks in relation to its therapeutical application upon this principle.

The best modes of bringing the system under the mercurial influence next considered.

The belief stated that it acts through the medium of absorption.

In general, when the object is to produce a gentle ptyalism, *calomel* or the *blue pill* may be given, the former in the dose of half a grain, or a grain, the latter in that of 3 or 5 grains, morning, noon, and night. Any purgative effect is to be counteracted by opium. In cases of irritable stomach, the dose may be reduced, and if necessary given more frequently. If the medicine cannot be taken by the stomach, it will be necessary to employ it externally. For this purpose the mercurial ointment may be resorted to. This is also sometimes useful as an addition to internal means, particularly where the disease exists in the course of the external absorbents. Places to which the ointment is applied, and mode of application. It is sometimes necessary to produce the mercurial influence very speedily. In such cases the medicine must be introduced by every avenue. The doses are to be augmented, external frictions employed, and the ointment applied to blistered surfaces. Sometimes fumigation may be advantageously employed.

Great difference in the susceptibility of different persons to the action of mercury noticed. While in some instances it is almost impossible to affect the mouth, in others excessive salivation is induced by small quantities of the medicine. Different diseases are attended with a difference in this susceptibility. Sometimes the medicine accumulates in the system, and after having been given for some time with no apparent effect, breaks out at length with an overwhelming force. Practical cautions founded on these facts. A good rule is always to administer mercury with great caution, unless the necessity of the case demands its speedy action. In the great majority of cases, it is sufficient to produce the slightest effect upon the gums, and to give the medicine so as to sustain this effect.

Description of the mercurial sore mouth in its different stages and degrees of violence. Dangers of excessive salivation. Condition of mouth sometimes left behind after its subsidence. Treatment of excessive salivation.

Poisonous action of mercury on the constitution in some individuals. Attended with great prostration. Generally observed in hospitals. Treatment.

Occasionally mercury produces excessive and exhausting sweats, sometimes a peculiar eruptive affection. Treatment under these circumstances.

Alterative use of mercury next considered, viz. its use in quantities insufficient to produce any obvious effects on the system. This employment of mercury is important. It is especially advantageous in functional complaints of the digestive viscera, and more particularly when the liver is involved. Remarks upon the colour and quantity of the fæces as an indication of the state of the hepatic function.—The alterative use of mercury is called for when the stools are white or clay coloured or very dry and scanty, indicating a deficient secretion of bile—when they are very copious, liquid, and of a bilious colour, as in bilious diarrhœa and cholera morbus—and when they are dark coloured or black, and of a tarry consistence, as in melœna. Methods of administering mercury with a view to its alterative action.—In chronic cases with constipation, a blue pill may be given, or from half a grain to a grain of calomel, every night or every other night, followed in the morning, if the bowels be confined, by some gentle aperient. In acute cases, with irritable stomach and bowels, one-sixth of a grain of calomel or half a grain of the blue pill may be given every half hour, hour, or two hours, according to circumstances, and suspended when the requisite quantity has been taken—care being observed to avoid any effect upon the gums. A little opium may sometimes be advantageously added.

The preparations of mercury considered in five divisions, 1. metallic mercury, 2. oxides, 3. chlorides, 4. salts, and 5. sulphurets.

1. *Metallic Mercury.*

Not given internally in the liquid form. Always in a state of minute division. Mode of effecting this division. Change effected in the metal by trituration. Partial oxidation produced.

1. *Mercurial ointment—Unguentum Hydrargyri, U. S.* Constituents. Mode of preparation. Colour. Effects of time upon the colour. Purposes for which it is employed. Modes of application.

2. *Mercurial plaster—Emplastrum Hydrargyri, U. S.* Constituents, mode of preparation and uses.

3. *Mercurial pills—Pilulæ Hydrargyri, U. S.*—commonly called *blue pills.* Constituents. Mode of preparation. Colour of the mass. Effects of age. Kept in mass or made into pills. In the former state called technically *Massa Pilularum Hydrargyri.* Weight of the officinal pill 3 grains, containing 1 grain of mercury. Relative virtues of this preparation. Dose, 1 pill 3 times a day as a sialagogue—1 every night or every other night as an alterative. The mass is sometimes advantageously given in emulsion.

4. *Mercury with chalk—Hydrargyrum cum Cretâ, U. S.* Constituents. Mode of preparation. Therapeutical use. Dose, from 5 to 20 grains twice daily.

2. *Oxides.*

1. *Black oxide of mercury—Hydrargyri Oxidum Nigrum, U. S.* Mode of preparation. Chemical nature. Form and colour. Effects of time. Dose, from 1 to 3 grains, 2 or 3 times a day.

2. *Red oxide of Mercury—Hydrargyri Oxidum Rubrum, U. S.*—commonly called *red precipitate.* Mode of preparation. Chemical nature. Form—colour—solubility in water. Used externally as an escharotic and stimulant. Complaints in which it is employed. Modes of application. There is an officinal ointment called *Unguentum Hydrargyri Oxidi Rubri.* Much used.

3. *Chlorides.*

1. *Mild chloride of mercury—Hydrargyri Chloridum Mite, U. S.*—commonly called *calomel*—sometimes, but erroneously, *submuriate of mercury.* Chemically it is the *protochloride of mercury.* Mode of preparation. Impurity. Mode of purifying it. Form—specific gravity—colour—taste—insolubility. Incompatibles. Dose, from half a grain to a grain, 3 times a day. *Howard's calomel.* Relative value of calomel as a mercurial.

2. *Corrosive chloride of mercury—Hydrargyri Chloridum Corrosivum, U. S.*—commonly called *corrosive sublimate.* Chemically it is the *bichloride of mercury.* Mode of preparation. State as first obtained. Powdered for use. Colour—taste—solubility in water and alcohol. Incompatibles. Character as a sialagogue. Dangerous effects in overdoses. A corrosive poison. Therapeutical application. Dose, from one-eighth to one-quarter of a grain, 3 or 4 times a day. Given in pill or solution.

5. *Salts.*

1. *Yellow sulphate of mercury—Hydrargyri Sulphas Flavus, U. S.*—commonly called *Turpeth mineral.* Mode of preparation. Chemical nature. Form—colour—taste—insolubility. Dose, from half a grain to 1 grain as an alterative—from 2 to 5 grains as an

in dry weather; but I am disposed to agree with Dr. Pearson that damp weather is to be avoided – palliatives are astring. gargles either vegetable or mineral; acet. of lead is best (it turns the teeth & gums black); tar waters, creasote; chloride of soda to obviate fetor; leeches over the parotids & blisters; lapatives. Enternally acetate of lead has been recommended as specific.

14- Erethismus mercurialis (Pearson) – the mouth is unaffected, but there is a small quick pulse, paleness, tremor, sense of coldness & uneasiness at precordia, great prostration, & dangerous syncope may result from sudden motion. Treated by country air & milk diet.

15 Eruptions are produced by irritation of the stomach as they are by any other irritant of that organ – sometime chronic skin diseases are attributed to mercury but this is doubtful. Treatment discontinue the mercury – apply poultices.

Metallic Mercury.

1. Large quantities have been known to relieve intus-susception [but – neither theory nor experience seem favourable to its use.] When minutely divided it assumes a bluish leaden colour – this effected by triturating with other substances – by which process it is not oxidized as was formerly supposed except in a very partially – but when these preparations are kept it becomes gradually oxidized. The preparations of metallic mercury act probably by being converted into the chloride by the muriatic acid of the stomach, or some unknown compound.

2. Equal weights of mercury & fatty matter (e.g. Lard 2 3 parts Suet 1 part) – Rub the mercury with the suet & a little of the lard until the globules disappear, then add the rest of the lard – bluish gray becoming reddish by age from the formation of the protoxide. [Should exhibit no globules if examined by a magnifier of 50 powers] – Locally in tumors, enlarged glands, syphilitic & other ulcers. Also to prevent pitting in small-pox (Bucholz) cover the

place very shortly after the eruption – have tried it in one case with success – also to affect the system in syphilis or any chronic disease. Use Friction rubbed in perseveringly night & morn with the covered hand.

3. Rubbing mercury with resin & oil till the globules disappear, then mixing with lead plaster – plaster for tumours & glandular enlargements.

4. Rub mercury with confect of roses until the globules disappear, then incorporate with powdered liquorice root – soft, dark blue mass becoming olive and then reddish from oxidation – When rubbed on paper or glass it should present no globules; but applied to gold it communicates a silvery stain. Emulsion with sugar & water.

5. Three parts mercury, & five of chalk triturated – grayish powder – the weakest preparation, possible from its less minute division, more probably than in its containing less oxide. – In deranged condition of bowels & biliary secretion, green, or clayey stools of children. [as an alterative in Glandular affections of children (especially enlarged mesenteric glands) & their chronic maladies. For children the dose is two or three grs. – Rhubarb, Carb. soda, or Dover's powder may be combined with it. I May use Blue mass with chalk.

2. Oxides.

1. Best mode is that of U.S.P. viz. – To a solution of potassa add calomel – chloride of potassium remains in solution, protoxide of mercury is precipitated. Mercury 1 Eg + Ox 1 Eg. – an odourless, tasteless, incoherent powder nearly black becoming olive by age – light decomposes it forming the metal and the binoxide, then lighter & of a reddish tinge and

too harsh for use [alterative, purgative; mild & unirritating when pure; &] a used as a substitute for the other mercurials.

2. Form a nitrate by the action of dilute nit. acid upon mercury, and then drive off the acid by heat – the acid is decomposed, yielding ox. to the prot. oxide, thus forming deutox. of mercury, while nitrous acid (red vapours) escapes – not a pure deutoxide some prenitrate mixed – light reddish [tile-red] scales, little sol. in w. – finely pulverized when used. [As a caustic sprinkled over venereal warts, chancres, fungous ulcers]. Ointment (1 part to 8 of lard) at first red. then becomes dark lard de-oxidizing & converting it into protoxide – cutaneous irritations, indolent tumours – inflam. of the edges of the eyelids. [chron. conjunctivitis &c.]

3. Chlorides.

1. Form a sulphate of the peroxide, by boiling mercury in sulph. acid until dry – rub this with more mercury, then with chloride of sodium till globules disappear; then sublime. Rub the sublimate to a very fine powder & wash thoroughly with boiling distilled water. – [2 Eq. Chloride of Sod., 1 Eq. Mercury & 1 Eq. Bipersulph. of Mercury, intimately mixed & sublimed, produce 2 Eq. Proto-chloride of Mercury & 2 Eq. sulph. soda.] – Impurity is bichloride soluble in water & removed by washing – Tested by washing with & adding ammonia to the water; if bichlor. be present, a white precipitate appears. White or ivory coloured, powder, decomposed & blackened by light crystals, needle shaped terminated by four planes, heavy (sp. gr. 7+) tasteless, odourless, volatile by heat insol. in w. or alcohol.

Incompat. are alkalies, their (carbonates?) & sulphurets, alkaline earths, soap

Hydrosulphuret

Hydrarg. Cal., is made by receiving the vapour when sublimed in a vessel filled with steam — it is impalpable & pleasantly white.

2. Form. Bipercipitate as for calomel, add chloride of sodium & sublime without adding more mercury. It condenses in solid masses, partially crystallized, which are broken up, pulverized, white, semitransparent, not heavy (Sp. gr. 5.+), taste acrid, corrosive, sol. in water (20 parts cold, 3 boiling) more sol. in alcohol. (7 pts. cold 3 boiling) & still more in ether, incompat. alk., alk. earths, many metals, acet. of lead. Useful alterative, less apt to salivate than other mercurials — syphilis, cachexia & rheumatism in combn. with sarsap. — Powerful corros. poison, producing gastric inflam. & disorgan. — Antidote albumen, as Egg white, Wheat flour, milk — then antiphlog. & opiates. Form unpleas. taste, pill pres.

4. Iodides

1. Protiodide. Rub mercury & iodine together with a little alcohol, till globules disappear, or decompose calomel by iodide of potassium. A heavy (Sp. gr. 7 3/4) greenish yellow powder, insol. in wa. or alcohol — decomposed by light. Used as calomel, more efficacious in cachexia & syphilis, — chron. enlargements & indurations of liver, spleen &c. dose 1 gr. incr. to 3 or 4.

2. Iodidum rubrum — biniodide or red iodide — Rub mercury & iodine (twice as much as for the protiodide) with a little alcohol; or precipitate it from a solution of iodide of potassium by adding corros. sublim. — Scarlet powder or scales heavy (Sp. gr. 6 1/3) insol. in water sol. in al. — More poisonous than corr. sub. — used as corr. sublim. but not preferable — contains too lit-

the iodine. Dose - gr. 1/6 incr. to 1/4.

5. Salts.

1. Form bisulphate by boiling mercury in sulph. acid; then throw it into boiling water. A soluble sulphate, & an insol. subsulphate are produced. The latter is Turpeth mineral - a heavy powder, yellow, acrid, inodorous, insoluble (nearly) in water. Alterative & emet. but uncertain.
2. Precipitate by ammonia from solution of bichloride, washed & dried. Chem. comp. uncertain - White, inodorous powder, insol. in water or alcohol - not ivory white like calomel, has often a slight tinge of green. Externally only [internally considered poisonous] in porrigo, psora, herpes &c - usually as ointment (1 part to 8 of lard.)
3. Prepared with lard & neat's foot oil, if olive oil be used, it becomes brittle & crumbles - Bright yellow when fresh [with a nitrous odour] becoming green if spread with an iron spatula. Use one of ivory or wood. Excellent in skin affect. scald head, impetigo, scaly eruptions &c.

6. Sulphurets.

1. Mix mercury with melted sulphur, & sublime. Merc. 1 Eq. + Sulph. 2 Eq. - In mass dark reddish brown, heavy, in powder &c - lt, odourless, tasteless,

fused & volat. by heat, insol. in wa. or al. — Half a drachm is placed on a hot iron shovel and the vapour inhaled through a funnel.

2. Rub merc. & sulph. until globules disappear — a mixt. of the bisulphuret with sulphur — heavy, black, tasteless, odorless powder, insol. in wat. Dose gr. 5–xx.

— Iodine. —

1. Elementary body, non-metallic — Contained in sea-weeds (kelp), & sponges &c in the form of iodide of sodium, extracted by lixiviation, evaporation & sublimation — friable scales, heavy, (sp. g. 4 3/4) Bluish black, metallic lustre, odour like chlorine, acrid taste, volatile at 347° with violet vapour — almost insol. in water (7000 pts. by weight) sol. in al. & ether, and solution of iodide of potass. — adult. with water of which it will take up 15 per Ct. & remain solid.

2. Sometimes emmen., sometimes salivates. Absorption said to be specially directed to mamma & testis &c. — not observed this. —

3. Scirrhus — scrofula all varieties, acting I believe not as a specific but a tonic — dropsy, especially as cites internally & externally, I have used iodine externally & mercury internally — second. syphilis — Amenorrh. — Chron. indurations of liver, epigastric — chron. diseases of urin. org. — Tincture, — 3ss. to Rect. Spirit 3ij — water precipitates the iodine, hence objectionable for internal use because deposited on muc. memb. of stom. — applied as a paint to glandular & other enlargements, especially in scrofula, but I am afraid of producing eruptions around a line 2 or 3 inches broad around the inflamed surface, pass by on the sound & paint on the affected part — Comp. Tinct. — see under the Iodide of pot.

The iodine is detected by keeping, starch and chlorine.

4. Iodine, iron filings and water mixed together form iodide of iron; to this carb. potass. is added forming iodide of potassium & carb. of iron. — Octohedral crystals,

emetic. Scarcely ever used at present for these purposes. Sometimes employed as an errhine, diluted with 5 parts of starch.

2. *Ammoniated mercury—Hydrargyrum Ammoniatum, U. S.*—commonly called *white precipitate.* Mode of preparation. Chemical composition. Form—colour—insolubility. Used only externally. Purposes for which it is employed. Mode of application. An ointment made with it is officinal under the name of *ointment of ammoniated mercury.*

3. *Nitrate of Mercury.* Used only in the form of ointment. Mode of preparing the *ointment of nitrate of mercury* (*Unguentum Hydrargyri Nitratis, U. S.*) commonly called *citrine ointment.* Colour of the ointment. Therapeutical applications. Frequently diluted with lard.

B. Sulphurets.

1. *Red sulphuret of mercury—Hydrargyri Sulphuretum Rubrum, U. S.*—commonly called *cinnabar.* In the powdered state called *vermilion.* Mode of preparation. Chemical constitution. Appearance in mass—weight—colour—colour—of the powder—odour—taste—effects of heat—insolubility. Used only for fumigation. Mode of application.

2. *Black sulphuret of mercury—Hydrargyri Sulphuretum Nigrum, U. S.*—formerly *Ethiops' mineral.* Mode of preparation. Chemical nature. Form—colour—odour—taste—insolubility. Scarcely ever used at present.

IODINE.—IODINUM. *U. S.*

Chemical nature of iodine. Origin and mode of preparation. Form—weight—colour—aspect of the surface—odour—taste—relation to water, alcohol, and ether, as solvents.

Effects upon the system.—In small quantities it promotes the appetite, increases the strength of the pulse, operates gently on the bowels, and appears to act as a tonic. But if continued, it is found greatly to promote absorption, and at the same time to increase almost all the secretions, so that emaciation results, and goes on increasing with the use of the medicine. If still longer continued, it gives rise to derangements of the nervous system. Digestion is at length impaired, and the patient is worn out with hectic symptoms. When given in large doses, it produces the same effects in a greater degree, and the result is more speedy. In very large quantities it acts as a corrosive poison; but it is frequently rejected from the stomach, and therefore not necessarily fatal. More danger is said to accrue from small doses very long continued than from an overdose at one time.

Therapeutical applications of iodine. Dose, one quarter to half a grain, 3 times a day, and gradually increased to one grain or more. Never used in powder. Dissolved either in alcohol or in a watery solution of the iodide of potassium. The *tincture* is officinal. Proportion of iodine to alcohol. Dose, from 10 to 20 drops. Cautions as to the age of the tincture, and the mode of keeping it.

Iodide of potassium—Potassii Iodidum, U. S. Mode of preparing it. Form—colour—effect of exposure—taste—relation to water and alcohol as solvents. Possibly converted into *hydriodate of potassa* in solution. Dose, 3 to 5 grains; but given lately in much larger doses with impunity. Its solution has the property of dissolving iodine. A convenient method of administering the medicine thus afforded.

Compound Solution of Iodine—Liquor Iodini Compositus, U. S.—identical with *Lugol's solution*, given in the dose of 6 drops repeated twice a day and gradually increased.

Numerous preparations of iodine besides those mentioned have been used. Such are the *iodides of iron, of lead, of mercury, of starch, of sulphur,* and *of zinc,* and the *iodohydrargyrate of potassium.* Reasons for thinking most of these superfluous.

Iodine is externally used in the way of bath or ointment. Proportions of the ointment, ℈j. of iodine and ʒj. of lard. Effect on the skin. A compound ointment of Iodine is also officinal, containing 15 grains of iodine and 30 of iodide of potassium in ʒj. of lard.

CLASS XXIII.

ANTACIDS.

General Observations.

Substances which are capable of combining with and neutralizing acids. Hence all salifiable bases are antacids; but the alkalies, alkaline earths, and their carbonates, are the only ones used medicinally with this view. They are useful by correcting excess of acidity in the primæ viæ, and probably also in the blood. They serve also to correct or prevent acidity in the urine, and thus prove useful in the uric acid form of gravel.

CARBONATES OF POTASSA.

These have been already fully described. As antacids, the carbonate is given in the dose of from 10 to 30 grains, the bicarbonate in that of 20 to 40 grains. The infusion of hickory ashes and soot, sold in the shops under the name of *alkaline infusion*, is an impure solution of the carbonate of potassa. Mode of preparation and uses. Dose, f℥ij. 3 times a day.

CARBONATES OF SODA.

1. *Carbonate of soda.—Sodæ Carbonas, U.S.* Source, and mode of preparation. Shape of the crystals. Effect of exposure. Taste—solubility in water—alkaline reaction. Proportion of water of crystallization. Inequality of the salt as found in the shops. Better to use the dried carbonate. Dose of the anhydrous salt, from 10 to 30 grains—of the crystallized, from 30 to 60 grains.

2. *Bicarbonate of soda.—Sodæ Bicarbonas, U.S.* Formerly called *supercarbonate of soda.* Mode of preparation. As usually found in the shops not strictly a bicarbonate. Taste and solubility. Advantages as an antacid and antilithic. Dose, from ℥ss. to ℥j. Pleasantly administered in carbonic acid water with ginger syrup.

AMMONIA.

Sometimes used as a stimulant antacid. Given in the form of aqueous or alcoholic solution. *Solution of ammonia* (*Liquor Ammoniæ, U.S.*) and *Spirit of ammonia* (*Spiritus Ammoniæ, U.S.*) are officinal preparations. Seldom used internally. The *Aromatic spirit of ammonia* (*Spiritus Ammoniæ Aromaticus, U.S.*) is much employed. Uses. Dose, from 15 to 30 drops, largely diluted. *Carbonate of ammonia* may also be used as an antacid. Before treated of.

LIME.—CALX. *U.S.*

Employed in solution under the name of *lime-water—Liquor Calcis, U.S.* Mode of preparing lime-water. Effects of exposure to the air. Mode of keeping it. Proportion of lime dissolved. Taste. Therapeutical uses. Seldom given alone. Use of lime-water and milk. Effect of this mixture on the taste of the lime-water.

Carbonate of lime much used, either in the form of *chalk* (*Creta, U.S.*), or of *oyster shells* (*Testa, U.S.*). Mode of preparing chalk. Called by the United States Pharmacopœia, when prepared, *Creta Præparata.* Form—taste—insolubility in pure water. Solubility in water impregnated with carbonic acid. Combines astringency with antacid properties. Therapeutical applications. Given in powder or suspended in water by means of gum Arabic. Dose, from 10 to 20 or 30 grains, every hour or two, or less frequently.

Mode of preparing oyster shells. Officinal title when prepared, *Testa Præparata, U.S.* Difference in composition from chalk. Ground of preference in certain cases. Dose and mode of administration the same.

MAGNESIA.

Already spoken of in relation to its preparation, sensible and chemical properties, and uses as a laxative. As an antacid it is one of the most powerful, in consequence of its low combining number. Cases to which it is applicable. Dose, from 10 grains to a drachm. The carbonate is occasionally used in double the dose.

white semitransp., deliquescent, sharp saline taste, crepi-
tate, fuses & is volatilized – very sol. in water (⅔ of W.)
and alc. – Often largely adult. with carb. potass. – Alter-
ative, tonic sometimes irritates stomach, & produces eruption like
[illegible] – in scrof. & sec. syph. used [illegible] of mercury.
Chron. ulcers, tumours & eruptions scrof. or not – chronic
rheumatism – neuralgia, but in this I have not seen
it beneficial – catarrh & bronchitis.

5. Iodine ʒij; iod. pot. ʒiss; dist. water ℥j. –

6. Iodide of lead – mix solutions of iod. pot. & acet. lead,
iod. of lead is precip. – yellow powder – no advantage.
Iod. of sulphur. used in ointment.
Iod. of starch – non irritant, might be a means of
introducing large quantities into the system.
Donovan's solution – Put metal. arsenic, mercury
& iodine with water; iodide of arsenic, & biniodide of merc. are produced. It is a reddish solution,
5 drops three times a day increased – dangerous from
the arsenic – It affords a combin. of arsenic, iodine
& mercury at pleasure.

7. Iodine ointment, orange coloured, & stains the
skin of same colour; ointment of the iodide
does not colour skin, but perhaps not so effic.

CLASS XXIV.

ANTHELMINTICS.

General Observations.

Substances which have the property of poisoning or debilitating worms in the alimentary canal, and thus rendering them more easy of expulsion. In relation to their mode of operation, it is probable that some act by a directly poisonous influence upon the worm, others by a mechanical agency. In this view of the class of anthelmintics, all those medicines are not included in it which are employed in the expulsion of worms, but such only as operate advantageously, in consequence not of their relations to the human system, but of that which they bear to the worms themselves.

PINK-ROOT.—SPIGELIA. *U.S.*

Root of *Spigelia Marilandica*—an herbaceous perennial plant, growing in the Southern States. General character of the plant. The whole of it is possessed of anthelmintic virtues, but the root is most powerful, and is the only part recognised by the Pharmacopœia.

Shape and aspect of the root—colour—colour of the powder—odour—taste—relations to water and alcohol—effects of exposure.

Effects on the system. Effects on the worms. Modes of administration. Dose of the powder for a child from 2 to 4 years old, from 10 to 20 grains, repeated night and morning for three or four days, and then followed by a cathartic. The powder is sometimes combined with calomel in the proportion of 12 grains of the former to 4 of the latter. Dose of the infusion made with ℥ss. of the root to Oj. of water, for a child, from f℥ss. to f℥j., 2 or 3 times a day. The infusion is often associated with senna, of which ℥ss. may be added to the preparation, and the same dose given.

PRIDE OF CHINA.—AZEDERACH. *U.S.*

Bark of the root of *Melia Azederach*, or *Pride of China*, a native of the East Indies, and naturalized in our Southern States. Used chiefly in the South, seldom or never in the Northern States. Effects of the bark on the system. Effects on the worms. Used in decoction made by boiling Oij. of water with ℥iv. of the fresh bark to Oj. Dose for a child, f℥ss. every 2 or 3 hours till it operates, or night and morning for several days, and then followed by a cathartic.

WORMSEED.—CHENOPODIUM. *U.S.*

Seeds of *Chenopodium anthelminticum*, or Jerusalem oak. Those also of the *C. ambrosioides* are used. Both of these plants are indigenous herbaceous perennials. Odour and taste of the plants. These properties reside in a volatile oil which pervades the whole herb. The seeds only are officinal.

Size and shape of the seeds—colour—colour when deprived of their outer covering.

Effects on the system. Effects on the worms. Administered in substance, bruised or powdered, in the dose of ℈j. or ℈ij. for a child. The volatile oil is officinal, under the name of *Oleum Chenopodii*. Mode of procuring it. Colour and odour of the oil. Dose, from 4 to 8 drops for a child, repeated morning and evening.

COWHAGE.—MUCUNA. *U.S.*

Product of *Mucuna pruriens*—a climbing West India plant. Shape and size of the fruit. External covering of hairs or bristles. Colour of these and mode of separating. Mode in which they affect the worms. Administered in electuary. Dose of the electuary for an adult, ℥ss., for a child 3 or 4 years old, ʒj.

MALE FERN.—FILIX MAS. *U.S.*

Root of *Aspidium Filix Mas*, or male fern, growing in Europe and North America. Character of the root—shape in its unbroken state—condition as usually found in the shops—colour—odour—taste—relations to water, alcohol, and ether. Effects of time upon

its virtues. Effects on the system. Mode of action on the worm. Peculiar application. Scarcely ever used in this country.

BARK OF POMEGRANATE ROOT.—GRANATI RADICIS CORTEX. *U. S.*

Bark of the root of *Punica Granatum*, or pomegranate. Relations of the root to water. Effects upon the system. Peculiar vermifuge application. Administered in decoction made by boiling ℥ij. of the bark in Oij. of water to Oj., one third of which, repeated every half hour till the whole is taken, is the dose for an adult.

OIL OF TURPENTINE.

Powerfully anthelmintic. Particular vermifuge application. Dose for an adult, from f℥ss. to f℥ij., or even f℥iij. Effects produced upon the system by this dose. Followed in 2 or 3 hours by a dose of castor oil.

In small doses of 4 or 5 drops, repeated several times a day, the oil is useful in the stomachic worms of children.

TIN.—STANNUM. *U. S.*

Used in the form of powder. Mode of preparing powdered tin—*Pulvis Stanni*, *U. S.* Appearance. Mode of operating upon the worms. Particular application. Dose, from ℥j. to ℥j.